National Petroleum News

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Rails Propose Reduced Rates On 'Trainloads'

N. P. N. News Bureau

TULSA, April 17.—What is believed to be the first "trainload rate" for petroleum products ever formally proposed by the railroads is embodied in Docket 16460 now pending before the Southwestern Freight Bureau, proposing a reduction in rates from Mid-Continent points to Minneapolis-St. Paul.

The proposal is that rail rates be reduced 7.5 cents per hundredweight on refined oils and 6 cents per hundredweight on low grade oils, with the reduced rates to apply only on "volume shipments" of 40 cars or more to same destination.

Rail movement from the Mid-Continent to the Twin Cities has decreased considerably, it was pointed out in support of the rate-cut proposal, while shipments have increased by pipeline, barge and lake tankers through the head of the lakes, then by short rail haul.

Pipelines are said to have an advantage of 15 cents per hundredweight (approximately one cent per gallon) over rail shippers. Barging costs from the St. Louis area to Twin Cities are below 10 cents per hundredweight, according to one rail carrier's investigation.

See also Oil Transportation News on Page 16.

As a result of these advantages, it was said, the equivalent of 543 cars of gasoline and 574 cars of fuel oil moved by barge from the Mid-Continent to the Twin Cities in November, 1938, and about 1785 cars by pipeline.

Meanwhile, rail-shipping refiners have indicated that they regard the 7.5-cent reduction on gasoline as "too small" and suggest that the cut be at least 15 cents, or about one cent per gallon. However, some shippers said a 7.5c reduction on single car shipments would be "fair."

Typical of the rate cut proposed is the reduction on the Tulsa-Twin Cities rate from 46 to 38.5 cents per cwt.

Tulsa Grand Jury Indicts 140 in Strike at Refinery

N. P. N. News Bureau

TULSA, April 17.—Three indictments against a total of 140 persons, alleged to be members of the Oil Workers (C. I. O.) Union who have been on strike against Mid-Continent Petroleum Corp. here since Dec. 22, were returned today by a Tulsa County grand jury.

The indictments charge (1) conspiracy to bring about a strike and to intimidate refinery employes; (2) riot in connection with the strike, and (3) unlawful assembly in the refinery's turbine plant shortly after the strike was called the evening of Dec. 22.

State statutes list the conspiracy and riot charges as felonies, and the unlawful assembly charge as a misdemeanor.

The unlawful assembly indictment contains 106 names, the riot indictment, 12 names, the conspiracy count, 38 names. A few of the names appear on all three indictments and a few others on two of them.

President Jack Hays of the local union was among those named in the conspiracy indictment which charged that a number of the union members of the inner council met at Drumright, Okla. "on or about Dec. 22" and conspired and did call the strike.

Following release of the grand jury's final report and the indictments, County Attorney

(*Continued on page 22*)

East Coast Oil Companies Quizzed on Retail Prices

N. P. N. News Bureau

WASHINGTON, April 17.—The East Coast oil investigation, which has been smouldering for many months, has flared up again.

It has been learned that conferences are being held here between anti-trust division officials and marketing officials of major oil companies and their subsidiaries marketing along the Atlantic Coast from Maine to Florida.

The conferences, it is understood, are the result of complaints from retailers and jobbers and chiefly concern alleged tampering with retail prices on the part of major companies at the stations of their leased operators. Also included are complaints as to company policies with regard to prices at which they sell to jobbers and consumers, it was said.

According to the best information, the oil company officials are said to have appeared in response to an "invitation" sent out April 6 by Anti-Trust Division Chief Thurman Arnold, who asked that marketing officials come here "if they wanted to co-operate in an investigation of price complaints."

Although Arnold has not personally conferred with the oil company representatives who have come here, it is said that he has "stuck his head in the door" to hear a part of their stories. Mostly, it is understood, their conferences have been with W. B. Watson Snyder, long time oil attorney with the department, and Edward P. Hodges, chief of the anti-trust division's complaint section.

Justice Department officials, unusually open in discussing the matter, said "we asked them in because we thought they would like to explain some things to us and thought this was better than sending out field investigators."

Some 15 major companies and their subsidiaries and affiliates are said to be listed for these conferences; less than half this number have been interviewed so far.

Just how this proceeding by the justice department ties in with the Temporary National Economic Committee's investigation of the oil industry, is not clear. Date of the "invitations" to the companies to the conferences was subsequent, however, to first intimations that the O'Mahoney group was changing its tactics with regard to investigating the oil industry and would give oil men a chance to "tell their own story."

Texas Oil Men Seek 90-Day Oil Allowables

By Teletype

AUSTIN, Texas, April 17.—The highly important statewide proration hearing here today before the Texas Railroad Commission started out with a promise of an open fight among operators in the various pools but wound up with spokesmen pleading for harmony, co-operation and long-range planning.

The fight apparently was nipped before it actually reached the snarling stage when Chairman Lon Smith suddenly recessed the morning session and told the operators to spend the time until the afternoon session in an attempt to "get together."

Spokesmen for the operators then asked the Commission at the afternoon session to return to the plan of writing long-range proration orders which had proved so successful for the first quarter of this year. These spokesmen were joined by Commissioner E. O. Thompson who said that he had long been convinced that "we should have 60 to 90 day orders."

"This will give stability to your work," Thompson told the other two commissioners who, it will be recalled, had not consulted him in the preparation of the series of orders for April which caused so much turmoil that today's hearing had a record attendance.

Earlier developments in Texas allowable situation are reported on Page 17.

"We should keep our allowable always within the estimate of market demand, as estimated by the Bureau of Mines," Thompson also said. "These estimates have been pretty generally correct and are reliable. We should set our state allowable low enough below the market demand so that new wells coming in will not cause the allowable to exceed the total set by the end of the period.

"We have been drilling lots of wells. Shortly we will have so many wells that to give each well the bare marginal allowable will take up the entire

market demand. Our sole duty is to prevent actual physical waste of oil and gas in its production. We have come around to expect the Railroad Commission to find a market for all oil produced at a fair price. This is becoming increasingly difficult by the reason of so much drilling. Where are we going to get the additional market for the oil coming from the new wells being drilled by 1050 rigs running now in Texas?"

Prior to Thompson's remarks, the long-range proration orders had been advocated by R. E. Hardwicke, Fort Worth, Hines Baker of the Humble Oil & Refining Co. Houston, and Charles F. Roeser, Fort Worth, president of the Independent Petroleum Ass'n. of America.

Roeser recommended that an order be written covering May, June and July, with the allowable not to exceed the Bureau of Mines.

"If you issue a 90-day order," Roeser said, "new wells will add 100,000 barrels which can be absorbed, but if you go beyond that point, we will have pipeline proration."

Roeser then requested the operators present in favor of such an order to stand. A majority of those present immediately responded.

'Three Members, Not Two'

Turning then to the Commission, Roeser said, "this 90-day order should be signed, after consultation by three members and not two."

Loud and continued applause interrupted Roeser. After it had subsided, he said, "the oil industry looks to you for the stability to which we are entitled."

Hardwicke suggested that the Commission write a 60-day order during which time all operators would stay out of court, and the Commission could gather data from every pool in the state on which to base the succeeding orders on an equal basis.

Charles I. Francis, Houston Attorney, referring to what had appeared was to be a fight among the operators, said that "if one field starts out contesting the allowable of another pool, we will be headed toward such a situation and condition that will destroy the proration laws of Texas." He said that there was no more fundamental comparison between some pools than between night and day.

Senator Joe Hill, representing some East Texas operators, had precipitated the wrangle at the morning session when he asked the Commission to give that field more allowable and to lift the Sunday shutdown.

"There are two great fields in Texas not getting their fair shares of the allowables," Hill said. "They are East Texas and Oklahoma."

API Committee Appointed To Study Dealer Relations

FRENCH LICK SPRINGS, Ind., April 17.—Promotion of satisfactory dealer relations as an essential to sound public relations for the oil industry was approved at a meeting of the American Petroleum Institute's central committee on public relations, held here April 15-16.

A subcommittee on dealer relations, authorized to work with the 13 regional public relations committees, and headed by Daniel T. Peirce, New York, of Sinclair Refining Co., will study the entire problem of dealer relations, and will make recommendations for the maintenance of satisfactory relations with dealers. Other members of the subcommittee are: James Tanham, New York, of The Texas Co.; K. E. Cook, New York, Standard of New Jersey; and Wilmer R. Schuh, Milwaukee, president of National Ass'n. of Petroleum Retailers.

Subject of dealer relations will be placed before the group sessions on public relations to be held May 18 at API's mid-year meeting at New Orleans, it was decided. The subject will be approached both from the dealer's and the supplier's viewpoint.

It was also recommended that regional committees begin at once a comprehensive study of the dealer's relationship to the industry and the part they play as businessmen in their communities. Such studies will cover the broad, general aspect of dealers' relationship with supplying companies, generally, as well as with other branches of the industry and with the consuming public.

NAPR Group Confers With Indiana Standard

CLEVELAND—Following announcement has been received from National Ass'n of Petroleum Retailers' headquarters at Milwaukee:

"A committee from the NAPR, headed by Wilmer R. Schuh, President, conferred with several officials of the Standard Oil Company of Indiana last week relative to the difficulties caused by the Standard Oil Company salesmen in the field.

"On the committee with Mr. Schuh were F. L. Bosworth, Vice-President in charge of Marketing of the NAPR and F. L. Brewer, Chairman of the Board.

"The committee stated that they had been very well received and felt that considerable progress had been made. Mr. Bosworth stated, "this is a very serious problem and it would be quite unappropriate for me to make any predictions at this time, but I am sure that if both sides cool down our difficulties can be ironed out without anyone being hurt.

"Another conference is contemplated within the very near future."

Arkansas Tax On 'Imports' Of Gasoline Voided

LITTLE ROCK, Ark., April 18.—That portion of the Arkansas gasoline tax law which levies a tax on all motor fuel in excess of 20 gallons in the gasoline tanks of vehicles entering the state has been held invalid by the U. S. Circuit Court of Appeals on ground that it interfered with interstate commerce. State will appeal the case.

Proration Law Favored For Illinois

N. P. N. News Bureau

CHICAGO, April 17.—Most witnesses testifying at resumption of Illinois oil investigating committee's hearings at Champaign, Ill., April 14 favored a proration law based on market demand, according to word received here. Next hearing will be held April 21 at Centralia.

Similar hearings at Salem, Ill., April 7-8 indicated that most of the producing companies operating in Illinois were favorably-inclined to a state law providing for proration and well spacing. (See NPN, April 12, Page 18.)

Walsh-Healey Law Conference

WASHINGTON — Application of the Walsh-Healey law to oil companies, holding federal government contracts for purchases of petroleum products, will be discussed at a conference here April 28 between representatives of the oil industry and the Labor Department's government contracts division. The W-H law specifies labor standards for firms awarded government contracts.

Pipeline Divorce Bill In

WASHINGTON — Senators Borah, Idaho, and Gillette, Iowa, jointly introduced a bill April 17 to divorce pipeline operations from oil company control.

Illinois Oil May Back Up Into Oklahoma

TULSA, April 18.—Railroads' proposal to put in a 15-cent freight rate on crude shipped to Cleveland, Oklahoma, from Illinois oil fields, has aroused a storm among Sooner State producers. They interpret it as indicating that Illinois crude is available at prices which would give a laid-down cost in Oklahoma less than local postings.

'Commission Agents' Held Not 'Employes'

N. P. N. News Bureau

CLEVELAND, April 17.—Mississippi's supreme court has ruled that "distributors", who own their own equipment and are paid on a commission basis, and their employes, are *not* "employes" of the supplying company for purposes of the Mississippi state unemployment compensation law.

This decision, which is contrary to opinion of Internal Revenue Bureau in a similar case under the federal social security law (unemployment compensation), reversed a lower Mississippi court's ruling.

Decision was handed down in two cases, one was entitled The Texas Co. vs. Wheeless and the other, American Oil Co. (of Hattiesburg, Miss.) vs. Wheeless.

Frank Phillips Listed for U. S. C. of C. Talk

N. P. N. News Bureau

WASHINGTON, April 17.—Frank Phillips, chairman of the Board, Phillips Petroleum Co., is scheduled to speak on "The Petroleum Industry in Tomorrow's Business" at the 27th annual meeting of the Chamber of Commerce of the United States here May 1-4, according to the preliminary program.

Supreme Court Will Hear Valvoline's Appeal

WASHINGTON, April 18.—U. S. Supreme Court has noted "probable jurisdiction" in the appeal of Valvoline Oil Co. from a decision of the U. S. Court at Pittsburgh holding that its pipeline properties are common carrier lines, and hence subject to Interstate Commerce Commission valuation procedure. At ICC it was said today that argument in the case is unlikely before fall.

Boston Truck Strike Hits Oil Deliveries

BOSTON, April 18.—Strike of fuel and coal truck drivers called in the Boston area late last week, which had also tied up deliveries of gasoline, was still in effect today with negotiations between representatives of local 68 of International Brotherhood of Coal and Fuel Chauffeurs and Helpers (AFL) and supplying companies reported to be deadlocked.

While the ban was reported to have been on shipments of fuel oil only, nevertheless, gasoline had been affected and some stations suffered a shortage over the week end. Today, however, reports were that gasoline deliveries were being made, although with some difficulty.

Contract of fuel drivers expired April 1, and it was reported that the chief bone of contention between the companies and the Union was the expiration date of the new contract. The Union demand that the new contract expire Dec. 31, instead of April 1. It was pointed out by the companies that the Union would have greater bargaining power if its labor contract expired at the time of peak fuel oil deliveries.

Day Is WPRA Secretary

TULSA—Board of directors of Western Petroleum Refiners Ass'n. has named John C. Day as secretary and Miss M. S. Collins, treasurer, according to announcement by President Simmons.

CIO Calls Walkout Of Tanker Employes

NEW YORK, April 18.—National Maritime (C.I.O.) Union reported today that approximately 5000 employes on 133 tankers belonging to Socony-Vacuum, Standard of New Jersey, Tide Water-Associated, and C. D. Mallory & Co. were called out on strike last midnight, following breakdown of negotiations over union's demands. How many employes had heeded the call, was not known today.

The Union said that three other companies, operating approximately 60 tankers, have agreed to N.M.U. terms.

Walkout affects vessels on Atlantic and Gulf Coasts, but not on the Pacific.

Members of the federal maritime labor board were reported in New York, attempting to settle strike.

FDR is 'Hopeful' Of Mexican Oil Settlement

WASHINGTON, April 18.—President Roosevelt said today he is "hopeful" of a settlement soon of the Mexican oil expropriation controversy.

At his press conference he was asked what Donald R. Richberg, who has represented certain American and British oil companies whose properties were seized, had told him when he called at the White House earlier in the day. The President said they had talked about the Mexican situation and that Richberg appeared hopeful of working out some sort of solution. The President added that he, too, was hopeful.

First Hearing Under New Kansas Oil Law

WICHITA, Kans., April 15.—The new conservation law in Kansas having become effective April 15, the Kansas Corporation Commission has called a hearing April 25 at Wichita, to obtain evidence on which to base a proration order for May.

This will be the first meeting of the commission since two new members were appointed some weeks ago by Gov. Payne Ratner.

The notice of the hearing lists nine factors the commission will take into account in basing its allowables orders. One of them is given as "the prevailing price of crude oil generally in the state, and the various prices offered in relation thereto." Another is "the reasonable ability of each purchaser to satisfy his or its demands for oil produced in this state, without concentrating purchases in selected pools, and the availability of oil to the various purchasers by exchange with, or purchase from, other purchasers of oil produced in this state."

Resolution to Censure Mexican "Expropriation" Tabled

AUSTIN, Texas, April 15.—The Texas Senate has virtually killed an effort by the House to condemn officially the Mexican government for "suppression of American rights" and the seizure of foreign-owned oil properties. The senate voted 20 to 9 to postpone to May 20 the House resolution. That date, it is believed, will be beyond the closing date of the legislature.

NPN's Log ON OIL LEGISLATION

Summarized oil legislative information below is based on reports received at Cleveland from Washington and state legislatures, which are deemed reliable although NATIONAL PETROLEUM NEWS assumes no responsibility for accuracy or completeness of this information.

Congress

SENATE BILLS

US SB-2138, Capper, Kansas.
To establish a division of co-operatives in the Agriculture Department. Agriculture Committee.

US SB-2160, Connally, Texas.
Providing government regulation and control of the economic and industrial structure of the nation in time of war. Finance Committee.

US SB-2163, Logan, Utah.
Same as HB-5737 below. Military Affairs Committee.

US SJ Res-114, Wagner, New York.
Same as H J Res-265 below. Labor Committee.

US SB-2181, Borah, Idaho, and Gillette, Iowa.
Providing for divorcement of pipelines from oil company control. Judiciary Committee.

HOUSE BILLS

US H J Res-263, Wood, Missouri.
Authorizing bureau of labor statistics to make studies of productivity and labor costs in industry. Labor Committee.

US HB-5737, May, Kentucky, By Request.
To authorize an appropriation (size not mentioned) to enable U. S. to co-operate with republic of Panama in constructing a national highway for defense purposes. Military Affairs Committee.

US HB-5749, Jefferies, New Jersey.
For government construction and operation of a system of toll superhighways. Ways & Means Committee.

US HB-5750, Holmes, Massachusetts.
To amend motor carrier act with respect to ICC power to limit scope of operations of certain carriers. Interstate Commerce Committee.

US H J Res-165, Wood, Missouri.
Authorizing bureau of labor statistics to make studies of productivity and labor costs in industry. Labor Committee.

US HB-5649, Schafer, Wisconsin.
To repeal authority to enter reciprocal trade agreements. Ways and Means Committee.

State Legislatures

Bills Introduced

FLORIDA

HB-221, Holt.
Providing refund of gasoline tax on fuel used in operation of marine engines. To Finance and Taxation Committee.

HB-250, Platt.
Providing for refund of gasoline tax used in certain motor boats. To Finance and Taxation Committee.

HB-266, Harrell.
Places additional one cent tax upon gasoline and its products. To Finance and Taxation Committee.

HB-302, Allen.
Prohibits use of auxiliary fuel tanks on vehicles on highways. To Motor Vehicles and Highways Committee.

HB-334, Harrell.
Relating to appropriation and disposition of excise tax on gasoline.

HB-157, Getzen.
Providing for licensing of automobiles and trucks for private use weighing not more than 3000 lbs. Repeals all laws in conflict therewith.

HB-198, Martin.
Providing for issuance of drivers license to motor vehicles and carriers.

SB-186, Kelly.
Authorizing municipalities to collect license and excise taxes on business privileges and upon sales and transactions. To Cities and Towns Committee.

SB-109, Westbrook.
Providing for segregation of tax on gasoline sold for use by water craft.

ILLINOIS

SB-304, Ward.
Extends sales tax at 3% until July 1, 1941, then reverts to 2%. To second reading in House.

SB-305, Ward.
Extends utility tax at 3% until July 1, 1941, then reverts to 2%. To second reading in House.

NEW JERSEY

HB-538, McClave.
Appropriates approximately $35,000,000 to state highway department, about $4,000,000 less than present highway appropriation. Provides for construction only where there is federal aid or WPA projects. To Calendar.

SB-330, Foran.
Appropriating $25,000 to state planning board. To Appropriations Committee.

OKLAHOMA

HB-70, Miscovsky.
Chain store tax bill. To House Calendar.

SB-296, Anglin.
Relating to oil well spacing in common sources of supply.

SB-298, Thompson.
$1 auto license fees for churches and non-profit organizations.

SB-301, Hearne.
Relating to license tax on farm tractors.

PENNSYLVANIA

HB-1323, Lightenwalter.
Limiting jurisdiction of public service commission over carriers of property on highways.

HB-1315, Kenehan.
Exempts from tax fuels used for

equipment of political subdivisions and provides refunds.

HB-1334, Dalrymple.

Exempts from tax fuels used in water craft and provides refunds.

HB-1355, Eckels.

Amending public utility law to eliminate contract carriers from provisions of the act.

HB-1246, Brown.

Appropriating $30,000 out of motor license fund to board of finance and revenue for payment of loan and transfer agent.

HB-306.

Amending vehicle code relating to, among other things, restrictions on transportation of explosives, suspension of inspection stations and removing certain exemptions.

HB-1282, Kane.

Appropriating $50,000 to Department of Internal Affairs for research intended to develop additional sources of oil and gas in Pennsylvania.

HB-1375, Sollenberger.

Exempts from tax, liquid fuels used in stationary engines and for agricultural purposes, and providing refunds.

SB-452, Kilgallen.

Establishing public roads as state highways. To Highway Committee.

WISCONSIN

HB-676, Mace.

Act relating to exemption and limitation of levies on utilities, chain stores, gasoline and income taxes, and the disposition thereof. To Judiciary Committee.

* * *

Changed Status

CONNECTICUT

HB-997. Increasing dealer deduction from one to two per cent. Unfavorably reported and killed in House.

SB-922. Providing for the display of price signs at gasoline stations. Killed.

HB-1475. Providing that gross weight of commercial vehicles be increased to 35,000 lbs. Killed.

HB-571. Providing for size of price signs for sale of gasoline, licenses distributors, omits from exemption gasoline transferred from one distributor to another. Killed.

DELAWARE

HB-187. Increases gross weight for vehicles and loads. Favorably reported in House.

HB-403. Authorizing state borrowing of $800,000 to repay highway department. Killed in House.

HB-469. Prohibits misleading advertising in sale of motor fuel. Favorably reported and passed in Senate.

MAINE

HB-1758. Chain store tax. Exempts stations where daily average stock other than gasoline and petroleum does not exceed $200. Reported by substitute.

HB-2217. In House.

SB-42 and 43. Chain store tax, including filling stations. Unfavorably reported in Senate.

NEW HAMPSHIRE

SB-44. Providing for inspection of vehicles. Passed House.

SB-52. Providing for price posting at gasoline stations. Passed Senate.

NEW YORK

S Res-23. Extending to April 29 time for report of committee created to investigate cost price of gasoline and other motor fuels. Adopted in Senate.

OKLAHOMA

HB-85. Earmarks 97% of 2c gasoline tax for highway maintenance. Killed in House.

HB-70. Chain store tax, exempts stations primarily engaged in sale of petroleum products. Recommitted to Judiciary Committee in House.

HB-192, Blumhagen. Revising auto, bus and truck tax and abolishing mileage tax for highway use. Passed Senate.

HB-573. Tax on freight cars not owned by common carriers. Passed House as amended in Senate.

HB-505, O'Dell. Corrected use tax bill. Passed House and Senate.

HB-544, Branan. Motor vehicle excise tax. Passed House.

HB-415, Porta. Gasoline tax. Passed House.

HB-192. Auto, bus and truck license bill. Passed House.

HB-415, Porta. Re-enacting 4 cents a gallon gasoline tax. Passed Senate.

HB-536, Duncan. Fair Trades Act. To House Calendar.

HB-503, O'Dell. Corrected use sales tax bill. Passed House and Senate.

HB-607, Blumhagen. Appropriating $5000 for Interstate Commerce Commission hearing activities. Passed House.

HB-603, Branan. Amended state income tax bill provided for income taxation of federal employes. Passed House and Senate.

SB-298, Thompson. $1 tag tax on vehicles operated by church and non-profit institutions. Passed Senate.

SB-180, Thompson. Amending statutes relating to oil pipelines. Killed in Senate.

SB-296, Anglin. Relating to spacing of oil wells. Passed Senate.

SB-301, Hearne. Relating to license tax on farm tractors. To Senate Calendar.

PENNSYLVANIA

HB-885. Transfers $3,885,000 from motor vehicle fund to general fund, and providing for return. Passed in House.

HB-929. Defers automobile registration to April 1. Passed in House.

RHODE ISLAND

HB-559. Defers automobile registration to April 1. Favorably reported in Senate.

SOUTH CAROLINA

HB-73. Distributing two per cent of gasoline tax to counties. Unfavorably reported in House.

TEXAS

HB-94. Relating to load limits on highways. Unfavorably reported in House.

HB-203. Clarifies gasoline tax law. Limits refunds to four cents per gallon. Unfavorably reported in House.

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Bills Approved

ARIZONA

SB-143. To provide for the licensing, bonding, and regulation of travel service. Approved.

CONNECTICUT

SB-800. Relating to the location of gasoline stations and requiring a certificate of approval of local authorities. Approved.

KANSAS

SB-185. Confers powers on corporation commission to control crude oil production. Extensive changes in wording. Prevents discrimination. Changes exemption forms, procedure, etc. Approved.

SB-346. Directs Governor to execute in behalf of state, to institute a compact to conserve gas and oil, which is to be an extension to Sept. 1, 1939 of the Compact entered into February 16, 1935. Approved.

Oil's WASHINGTON CALENDAR . .

Below are given the dates and notices of hearings, proceedings, new legislation, etc., which are of importance to oil companies. Notice is also given of regulations issued, interpretations of laws, new publications, etc., with information as to how readers may secure official copies of these.

HEARINGS:

Interstate Commerce Commission:

April 24—Further hearings on question of need for safety regulation for privately-operated trucks. (Omaha, Neb.).

April 27—Same as above. (Dallas, Tex.).

May 1—Same as above (Atlanta, Ga.).

May 3—On ICC order to show cause why contracts filed with ICC should not be open to public inspection, why contract carriers should not be required to furnish information as to number and types of vehicles operated, commodities transported, tonnage carried, miles operated and other data.

HEARINGS:

Temporary National Economic Committee:

June 1 (or before)—"Forum" for oil industry.

CONFERENCE:

April 28 — Government officials and oil industry representatives to confer over application of Walsh-Healey Government Contracts Law to purchases of petroleum products.

ARGUMENTS:

Interstate Commerce Commission:

April 28—On application of Southeastern railways to publish reduced rates on petroleum products from marine terminals to inland points. (ICC Bldg., Washington, D. C.).

May 15—On application of Standard Oil Co. of Louisiana for reduced rates from Baton Rouge refinery to points in Midwest and Southwest. (ICC Bldg., Washington, D. C.).

EFFECTIVE DATES:

Federal Power Commission:

July 11—Order 59, amending rules of practice under Natural Gas Act.

MEETINGS:

May 1 and 2—American Trade Assn. Executive spring meeting.

REPORTS AVAILABLE:

(To obtain following, write; Superintendent of Documents, Government Printing Office, Washington, D. C.).

RP1160. Properties of purified normal heptane and isooctane (2,2,4-tri-methylpentane). Donald B. Brooks. Price, 5 cents.

FINAL REPORTS

Montana

(Convened Jan. 2—Adjourned March 2.)

BILLS ENACTED

HB-33. Providing method of assessment of pipelines continuing through more than one county.

HB-3. Provides greater security for payment of wages by employers engaged in drilling for oil.

HB-73. Eliminates provision allowing refunds to counties and municipalities upon gasoline used by them. Also strengthens refund section of law.

HB-165. Amending fair trade act

HB-36. Relieving service station operators of $10 per annum auto accessory dealers license.

HB-350. Providing that when establishment sells at both wholesale and retail, operator must pay both wholesale and retail tax.

HB-347. Providing that assessment of petroleum and natural gas royalties shall be entered by county clerk in the personal property assessment book under the name of the producer.

SB-91. Legalizes initiative election which approved measure entitled "State Highway Treasury Anticipation Debenture Act of 1938" which provided for gasoline tax of 5 cents per gallon.

SB-138. Providing for uniform dimensions and weights of motor vehicles.

SB-39. Provides for joinder of parties in cancellation of oil and gas leases and quieting titles.

Bills Which Did Not Pass

HB-343. Requiring every person engaged in business of producing natural gas to pay license tax equal to three-eighths of cent per 1000 cubic feet of gas produced.

HB-408. Tax at rate of three-quarters of cent per 1000 cubic feet on persons transporting natural gas.

HB-380. Increase chain store rates, other than filling stations.

HB-300. Tax of two per cent on gross receipts, gasoline exempt.

HB-17 and SB-23. Eight hour day for drivers of commercial truck drivers.

HB-68. Two operators on trucks carrying in excess of 10 tons.

HB-124. Allocates fifty per cent of revenue from registration fees to treasuries of municipalities for streets.

HB-352. Mileage tax of one cent per mile on trucks outside city limits.

HB-406. Levying compensating tax on private trucks operated more than 20 miles beyond corporate limits of cities at $1 per 100 pounds and for-hire trucks at five per cent of gross earnings.

HB-173 and SB-48. Creating labor relations board.

SB-182. To provide for a $10 fee for insurance to be paid at time of registration.

SB-208. Defines, regulates and licenses itinerant vendors.

SB-214. Declaring natural gas pipelines public utilities, subject to regulation by the Public Service Commission.

Fuel Oil Convention Hears Criticism of 'Free Service'

By L. D. McGUAN
N.P.N. Staff Writer

ASBURY PARK, N. J., April 15. — The subject of "Burner Service" one of the outstanding problems facing the oil and burner industries, featured the fourth annual convention of the Fuel Oil Distributors Association of New Jersey here April 13 and 14.

The oil industry has "educated the fuel oil customer to expect more service than is necessary or can be provided", said Raymond W. Henshaw, Home Fuel Oil Co., Passaic, in a talk which traced the entrance of fuel oil distributors into the burner and servicing fields.

He told of the reciprocity between burner and oil companies, with the former turning over newly created oil customers to fuel oil suppliers, who in turn furnished prospects for the burner companies.

This led to the payment of money for such customers, he said, and finally to the entrance of oil companies into the burner field to escape competitive bidding for oil customers. With his entrance into the burner industry, the oil man "inherited all the ills typical of a disorganized industry", he said.

With the natural decline in volume of burner sales the "trend during the past two years", he said, "has been along the lines of more and more attractive service offers".

This has resulted, he said, in the customer refusing to pay a reasonable charge for burner service—a reduction of revenue and an increase in costs—guarantees which remove the sales of parts as a source of revenue—and competitive "high pressure salesmanship which has educated fuel oil customers to expect more service than is necessary or can be provided".

He chided fuel oil distributors for their lack of knowledge about costs of providing service, citing figures which showed that it cost New Jersey distributors between $8.33 and $15.38 per customer for the season, or from $2.75 to $5.00 per call, to break even.

The range of costs, he said, was due to the difference in operating conditions and service men employed.

One service man, Mr. Henshaw said, can provide adequate service for 300 to 400 oil burners. The more common figure, he added, would be 300. Of these 300 customers, he said that there will be an average of 30 new users requiring four calls each during the season. The remaining 270 accounts will average about three calls each, or a total of 930 calls to be made by one service man.

The figures he cited showed it costs the fuel oil company from $2500 to $4600, including salary of $1500-$3000, per year to maintain a man to service these 300 burners.

These figures, he added, do not include collection loss.

Sell Quality—Not Quantity

He warned fuel oil suppliers that they were "forcing on the customer more and more for less and less to the extent where the customers' suspicions are being aroused." "Selling of quality service rather than the quantity is the most important angle," he said.

Digressing at the outset from his talk on "Merchandising of Fuel Oil", Frank W. Lovejoy, Socony-Vacuum Oil Co., New York, took issue with a previous speaker, Ralph E. Lum, member of the New Jersey House of Representatives who said that he didn't think the legislature could or would reduce the gasoline tax at this session because it could not stand the loss of $7,000,000 involved in a one-cent reduction. Discussing oil bills introduced in New Jersey, Mr. Lum had said that the oil industry "was getting off easy as far as New Jersey was concerned."

Lovejoy acidly asked "why in heaven's name the legislature couldn't get oil out of its mind," pointing out that taxes took one-third of the consumer's oil dollar now.

Lovejoy jerked fuel oil distributors to attention when he prefaced his talk with the charge that of all marketers, "you are the rottenest." He included his own company in his charge. He said that fuel oil was sold on price alone.

"Fuel oil will have to get over into the gasoline bed", he said, charging that distributors were too anxious for volume to do a good job of merchandising. He said that fuel oil distributors have "failed to apply to fuel oil the fundamentals of marketing—creating acceptance of a brand". The public "will pay the price for a product if it wants it, and it is within reasonable limits."

He scored "free service" as "Second Avenue selling," and said it was "not fundamentally sound."

"Are there any advantages of fuel oil?" he asked, contending that fuel oil was not sold on its advantages, but merely on price.

William Sullivan, Jr., Shell Union Oil Co. told fuel oil distributors that "despite the marked advancement within the past few years, there still exists in the oil heating field a surprising lack of reliable information as to what specifications a domestic fuel oil should meet in order to insure satisfactory burner performance."

He said that oil burner manufacturers up to the last year or two have been so busy gearing up production lines that "in far too many cases the problem of combustion efficiency and the relation between oil burner performance and the quality of fuel it is designed to handle has escaped their attention entirely."

Arnold Michelson, Minneapolis Honeywell Regulator Co., Minneapolis, told distributors that they should provide burner service, but that they should be properly equipped, and to sell "economical", not "cheap" service, and to put profit into their operations.

A. E. Lee, Standard Oil Co. of New Jersey, Newark, spoke briefly on the American Petroleum Institute's program of public relations for the oil industry and told distributors that they should show a "united front to the public."

New Jersey Fuel Oil Dealers Re-elect Studerus

ASBURY PARK, New Jersey—Officers of Fuel Oil Distributors Association of New Jersey for 1939, elected April 14, are:

President, Ernest Studerus, Studerus Oil Co., Kearny; vice-president, Charles H. Bruett, J. Blondel & Son, Inc., Montclair; treasurer, A. C. Lindeman, Lindeman & Co., Inc., Newark; secretary, J. F. Hoff, Jr., Princeton Fuel Oil Co., Princeton; and executive secretary, A. W. Rich, Newark. Studerus was president last year; Lindeman and Rich also were re-elected to their positions.

Board of Directors: J. M. Di Bella, West Shore Fuel Oil Co., Teaneck; H. A. Isaacs, Jr., Oil Delivery, Inc., Red Bank; S. C. Craig, Craig Fuel Oil Co., Rutherford; W. L. Yeomans, Plainfield Lumber & Supply Co., Plainfield; L. E. Marron, Home Fuel Oil Co., Passaic; and F. C. Conkey, Fuel Oil Supply, Inc., Elizabeth.

Connally Law Hearings Set

N. P. N. News Bureau

WASHINGTON, April 17.—The Cole oil subcommittee of the House Interstate Commerce Committee will hold hearings April 26 and 27 on the Connally-Dies proposal to make the "hot" oil law permanent.

The dates were chosen by Chairman Cole so as to be nonconflicting with the many other hearings of the busy Interstate Commerce Committee, and, because of the press of business, the "hot" oil hearings will be held in the afternoons, it was explained.

Connally's bill (Senate 1302) passed the Senate on March 23 under the "unanimous consent" procedure—there was no objection, so the bill passed without a record vote. No hearings were held by the Senate committee considering the measure, adopting Sen. Connally's recommendation that the matter was fully discussed at hearings two years ago.

It is understood that chief opposition to "permanization" of the "hot" oil law will come from independent marketers, led by Paul E. Hadlick, secretary of National Oil Marketers Assn., as it has in previous years.

The Cole subcommittee in the House includes Representatives Cole, Maryland; Kelly, Ill.; Mapes, Mich.; Wolverton, N. J., and Pearson, Tenn.

O'Mahoney Inquiry Gets $600,000 More

N. P. N. News Bureau

WASHINGTON, April 17.—A bill appropriating an additional $600,000 for use by the Temporary National Economic Committee (the O'Mahoney monopoly investigating committee) is now before President Roosevelt for approval. It is expected that he will sign it.

However, the $600,000 additional appropriation did not slip through Congress without some members inquiring as to what the committee has done with the $500,000 which it received last year.

Chairman O'Mahoney announced last week that an "open forum" type of inquiry would be launched when the committee takes up the oil industry sometime prior to June 1. Oil men—big and little, and of all shades of opinion—will be given a chance to "tell their own story," according to O'Mahoney's announced plans. (See N. P. N., April 12th.)

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Indiana Standard's 50 Years Were Lived in America's Cauldron of Social Progress

By WARREN C. PLATT, Editor

The Standard of Indiana is celebrating its 50th birthday this year. It points with pride to its record, in its just issued annual report for 1938.

The company recites its material assets totalling $725 million; that it serves all the territory east of the Rockies except in four states; that it has 30,000 employes and nearly 100,000 stockholders, as compared with 6078 when it was "dissolved" from the old Standard Oil Co. nearly 30 years ago.

Then, like most businesses, it mentions the company's social contribution to the country in a short paragraph, as follows:

"For fifty years Standard of Indiana has successfully turned a natural resource which is almost worthless in its crude state into what economists call wealth. This wealth has gone to the owners of the earth from which it was extracted, to the men who toiled producing and manufacturing and distributing, to scientists in laboratories, to inventors, investors, suppliers and carriers of goods and materials, and to government. A large share has also gone to customers in savings on transportation costs and in abundant free service. Jobs, security, human happiness—these are 'profits' distributed in the fifty years which have not appeared in the accounts but have been added to the permanent social assets in the nation's balance sheet."

These are assets to which the whole oil industry can very properly lay claim, social assets provided by every oil well and every gasoline pump; "jobs, security and human happiness" that come from every company in the oil industry no matter how large or how small. The existence of these assets is known to every oil industry employe and every oil industry stockholder of which there are more than a million of each at least. But do these people directly associated with the oil industry actually see and think of these assets? When these oil people do fully realize and appreciate these social values which they are drawing from oil and helping to contribute to the rest of the country, will there not be a better understanding of all business by the so-called "general public" which consists of employes and stockholders of other industries?

The Standard of Indiana's comment suggests if the "public relations" job of which much has been said in the oil industry, could not be better done by each industry making its people more conscious of the social assets of their jobs and investment? It also questions if one group that has bought "cheap transportation and abundant free service" from another group are interested in hearing more than that? It questions if the oil industry by the quality of its product and its low price has not made the best argument to other groups that it can and if that isn't about all the "other group" can be interested in?

To be read in connection with this thought are two more paragraphs from the Standard of Indiana's 1938 report, as follows:

"The long years of vigorous business activity have not been entirely clear sailing. Any individual or organization occupying a position of leadership is bound to be subjected in time to criticism and attack, and this company has had its share of both. It has had to adjust itself to changing social ideas. But the best proof that it has been right and fair and amenable to the public will is that it has constantly enjoyed extensive patronage and support. No company could be strong at the end of fifty years if it had not earned the respect and confidence of people served.

"Because it was a pioneer, Standard of Indiana once enjoyed about 90 per cent of the oil business available where it operated. Its business today, though far greater in volume, is only a fraction of the total. Many oil companies not in existence then are now of major importance. Competitors are numbered in hundreds or thousands today where they could be counted on the fingers. There has been business enough for all. All the stimulus of competition has made growth for all."

Certainly the Standard of Indiana has had its full share of political and competitive attacks, far more than any of its old brother Standard companies. But lets look at the times and the country in which this Standard has been most active these last 30 years particularly. That may afford a clearer view of the oil industry's "public relations" problem, as well as somewhat of an explanation for "The Indiana company's" troubles.

It was about 35 years ago that the great "Teddy" Roosevelt got well into his campaign against "malefactors of great wealth." He aimed his shots at their corporate strongholds on Wall Street and lower Broadway but he got most of his political support from the far west, from the marketing territory of what was later this "Standard of Indiana." During Teddy's reign, if memory is correct, attention on these "malefactors" was largely centered on those alleged to be in the oil industry, thanks to a group of never-say-die independent producers and refiners in Western Pennsylvania. There was a senate investigation of Standard Oil, another by the Interstate Commerce Commission, still another unearthing tons of facts and figures by Secretary Garfield of the department of commerce. All of this lead to the starting of the big suit to dissolve the Standard which brought out more publicity and was finally won in 1912.

All of these attacks got their heartiest support and oftentimes their only support from statesmen and others in the present Standard of Indiana territory. Even the special assistant to the attorney general who won the prosecution came from Minnesota and the court that awarded him the victory was in St. Louis.

But it was not any war on the Standard or the oil

industry that the people in this vast western territory were primarily concerning themselves with. During most of the life of this present Standard company the first descendants of the early settlers had begun to straighten up the evils and repair the faulty machinery of government that always have resulted from the rush of pioneering days. These farmers and ranchers were trying to overcome their own difficulties, due to the rush of pioneering and also to their own experience and ignorance. They fought the railroads for their high freight rates and the practices and charges of the grain elevators. They finally attacked the farm machinery manufacturers and the packers.

There were no political machines, at least state-wide of any consequence and the electorate decidedly did its own thinking and voting. So with these frontier evils and the spirit of the frontier still politically rampant, good men and bad, silver-tongued orators—some who were real leaders and others just charlatans—cruised up and down the Mississippi and Missouri river valleys charging all the evils, corporations and "windmills" in sight. Political "movements" of all shades of character, honesty and strength were started. Some flourished for only a short time and others continued for years. Men made a business of stirring up the voters and some are following that "business" to this day. A dynasty of political reform, or discontent, whichever way your leanings may be, was worked up by one orator from Wisconsin and it has been handed down to his sons as a "going business." The "causes" got to be such a curse that William Allen White, editor and sage of Emporia, Kans., himself, even by today's standards, a "progressive," seized his pencil and wrote a phillipic against the nostrum peddlers that will always be a classic. He bluntly urged Kansas to "raise more corn and less hell."

It was and is still, thank God, Democracy's way of thinking, of acting and of making progress. And great and lasting progress was made for these United States and all the people from the Atlantic to the Pacific by what went on in this cauldron of public thought outlined largely by the marketing territory of the Standard of Indiana.

Into this maelstrom of political struggle at the turn of the century came the beginning of the gasoline age, and into this particular territory came the vast new oil fields of Kansas and then Oklahoma and Texas. While the political battle against "malefactors of great wealth" raged, into this same area came opportunity for thousands of people to accumulate real substantial amounts of wealth and for many hundreds of thousands to make a better living than they ever had before.

On the ever increasing floods of new and cheap crude oil came new refiners who sent their kerosine and gasoline into the Standard's territory by tank car. They fought with the Standard for a phenomenally increasing market demand, the size of which no one really appreciated, else the prices would have been ruined at the outset. But the tremendous increase in demand for gasoline by reason of the growth of the automobile's use, kept increasing the gallonage per outlet and reducing cost per gallon so rapidly that no decrease in price due to this new competition could destroy the profit.

So every one made money—much money. Refineries paid out in a few months time. Independent jobbers grew overnight to great size and accumulated even large fortunes. The Standard's various managements rubbed their eyes and cried aloud in fear that the next wave of cheap crude would swamp them. But it didn't.

The new competition was aggressive. It seized on the progressive political thought and aimed investigations and other legislative attacks at the great oil competitor. The newcomers banged away at the freight rates and got them reduced so they could grow still more.

And all the time the people in these two great river valleys, sound, but aggressive thinking Americans, were being appealed to by bearers of still newer ideas and nostrums. The big war prices for farm products added to the growth. The after-war deflation blew up most of the quick panaceas. Old refiners quit as fields dried up. They died or sold out and their successors became the big new oil companies of today. Jobbers also retired from business generally with comfortable savings.

Out of the boom period of the late 1920's came another army of competitors. Then we had another blowup and here we are today.

The oil producing states have instituted much needed conservation laws so the wild floods of cheap crude, that wasted billions of barrels of crude oil, are no more.

Independent refiners, by reason of lack of cheap crude and jobbers turning away from their own private or "unbranded" gasolines and adopting more easily sold national brands—a product of the modern today—have dried up to but a couple of handfulls.

The simply unbelievable increase in gasoline demand by the automobile, increases year after year of better than 15 per cent and upwards of 27 per cent, an increase that has obtained every single year from the beginning of the gasoline age to the present except in 1932—that gift of a market increase of such great proportions seems to be over. The various booms have brought many people to oil marketing. The ten years of large unemployment have sent thousands of men into the oil business who are willing to take WPA wages or less.

One of the greatest eras in American commercial and political history has passed. And the Standard of Indiana, right in the thick of it all these years, pauses on its 50th birthday to rather wonderingly comment to its employes and its stockholders that there had not been "entirely clear sailing."

Birth of new ideas, especially of freedom, seem always to have been accompanied by more pain and battle than birth of men. And great new ideas have been born in Standard of Indiana territory these past 50 years.

So perhaps the Standard is well entitled to the observation, that it makes in its report that "no company could be strong at the end of fifty years if it had not earned the respect and confidence of the people served."

To which, might well be added, that no company could have survived the storms of this adolescent gasoline era in this cauldron of political and economic reformation in the Middle West, unless it was giving the people fair value for their money.

There probably is not a competitor of this or any other big company, nor probably a trade or newspaper editor either —who does not feel that he could greatly "improve" the company's operation if he had his say. But when we look at this company's record of growth and constant dividends, and at the ever increasing and for the most part strong competitors, and we consider that its employes have increased to 30,000 and its owners to 100,000—well, one cannot help but think that with all our trials and tribulations, the Standard of Indiana and its thousands of competitors are typical American institutions of which America should be proud.

Could there not be a greater realization by all of us of the fact that in a free democracy such as ours, progress is made by human beings each contesting for his point of view and for more of this world's goods; that the harder the battle the greater and sounder the progress. But cannot there be a better recognition that this is evolution and that there are rules that can be written and adhered to which will expedite and make easier and more pleasant our adjustment "to changing social ideas" to quote the Standard's annual report?

So to Messrs. Seubert *et al.*, to his 30,000 employes and his 100,000 stockholders, many happy returns of the day. Past years with you and your predecessors have been neither dull nor uninteresting. While the times were stormy both you and your competitors and even us editorial bystanders profited but, we all will agree, the consumer profited the most.

One outstanding trait of this oil industry and the human beings in it is that they will always leave a fight, no matter how glorious it is, for a party. So here at your 50th birthday party we wish you and your associates many more of them.

OIL TRANSPORTATION NEWS

Latest developments in freight rates, legislation, taxes, regulations, and new construction affecting the transporting of petroleum products by truck, barge, tanker, pipeline, and railroad.

Rails are Foiled in Effort To Regulate Private Trucks

N. P. N. News Bureau

WASHINGTON, April 17.—A railroad-inspired attempt to slip over a revised "commodities clause" in the Interstate Commerce Act which would have resulted in divorcement of pipelines from oil company ownership, and could have virtually abolished the privately operated truck and barge has been tossed out of the Wheeler-Truman omnibus transportation bill. (S.2009).

If enacted, this provision would have barred oil companies, including jobbers, from operating their own trucks to haul their products—if they were in "interstate commerce." It would have also prevented department stores, dairymen, grocery stores, and many other large customers of the oil industry from delivering their own products.

But for the fact that pipeline, barge, and some private trucking representatives saw through the attempt, it might have got through congress. However, a number of pipeline witnesses massed in the committee room last week, a larger number of barge representatives came in, and several representatives of private trucking interests were present.

Testimony on the amended commodities clause was cut short, however, when Chairman Wheeler announced to everyone in the room that if they were there to testify on this clause they were wasting their time, because he didn't think either the clause itself nor pipeline divorcement were in the proper forum when they were before a committee discussing railroad legislation generally. He indicated this provision would be tossed out of the bill.

Several of the witnesses filed formal statements with regard to the commodities clause, but no pipeline witnesses actually testified, and only one or two from other forms of transportation.

It is understood that the revision of the commodities clause was promoted by a prominent railroad lawyer and was drafted in the bill, which, as written, included a number of other railroad-sponsored changes in the Interstate Commerce regulations. The Interstate Commerce Commission, likewise, through its legal division, aided in drafting of the measure.

William H. Ott, president of the National Council of Private Motor Truck Owners told the committee in his statement that such a clause would "disrupt distribution processes and severely affect the consumer."

Private Truckers Deny Need For Federal Control

N. P. N. News Bureau

WASHINGTON, April 17.—Representatives of industries which use private carrier truck transportation told Interstate Commerce Commission Examiner R. W. Snow at hearings here last week that there is no need for federal regulation of the private truck, because state and local authorities regulate it adequately.

The petroleum industry was represented at the hearings, part of a series of presentations in connection with the ICC's investigation into private carrier regulation, by J. F. Winchester, manager of the automotive department of Standard Oil Co. of New Jersey.

"It is my belief," Winchester said, "that the state and local authorities are fully competent to deal with private carrier."

Rates from Shreveport Area Into Southeast May Be Cut

TULSA, April 18.—Because of an 800-car-per-month loss of gasoline business originating in the Shreveport, La. area to competing transportation facilities, Southwestern rails in S.W.F.B. Docket 163 92 propose reduced petroleum rail rates from southwestern and Mid-Continent origin points to Southern Freight Ass'n. territory and lower Mississippi River destinations.

Following are representative of proposed rates on refined oil, together with normal rates and amount of reductions in cents per hundredweight:

From New Orleans to:	Normal	Proposed	Reduction
Vicksburg, Miss.	24.0c	18.5c	5.5c
Mobile, Ala.	28.0	22.5	5.5
Birm'gh'm, Ala.	37.0	31.5	5.5
Nashville, Tenn.	47.0	37.5	9.5
Atlanta, Ga.	47.0	32.0	15.0
Louisville, Ky.	48.0	38.0	10.0
From Shreveport to:			
Memphis	33.0	24.5	8.5
Vicksburg	26.0	18.5	7.5
Mobile	42.0	32.5	9.5
Birmingham	47	37.5	9.5
Atlanta	54.0	38.0	16.0
Louisville	48	38.5	9.5

'Gas' Line Threat Cited

Reduced rates, according to rails, would prevent further reductions in rail tonnage, induce shippers to return to rails a substantial portion of tonnage now handled by competitors, assist in checkmating growth of private transportation agencies, aid refiners who have been forced to cease or curtail their operations due to inability to compete on present rate structure, discourage contemplated construction of gasoline pipeline to serve Shreveport, La.—Eldorado, Ark. group and inevitably to serve East Texas group, and to encourage movement of long-haul traffic.

Mid-Continent Rate On 'Gas' to Illinois May be Cut by Rails

N. P. N. News Bureau

TULSA, April 18.—Efforts to realign petroleum rail rates in the Southwest have resulted in publication by Southwestern Freight Bureau of Docket 16457 proposing reductions in petroleum rail rates from Kansas City, Mo.; Coffeyville, Kans.; Tulsa and Vinita, Okla.; Shreveport, La.; and Ft. Worth, Houston, Ranger, Waco, San Antonio, Uvalde, Brownville, Pecos and El Paso, Tex. to several Illinois destinations.

Reductions between representative Mid-Continent-Illinois points range from 2.5 to 6.5 cents a hundredweight on refined oil. Shown below are present and proposed rates in cents per hundredweight, together with amount of reductions, from certain Mid-Continent points to Illinois destinations.

Tulsa to:	Present	Proposed	Reduction
Cairo	36.0c	33.5c	2.5c
Centralia	40.0	33.5	6.5
Du Quoin	36.5	33.5	2.5
Ft. Worth to:			
Cairo	38.5	36.0	2.5
Centralia	42.5	36.0	6.5
Du Quoin	38.5	36.0	2.5

Proposed rates to Cairo, Du Quoin and Centralia, Ill. from Kansas City, Mo. and Coffeyville, 32c; from Wichita and Shreveport, 33.5c; from Houston, 36.5c; from San Antonio, 38c; from Pecos, 39.5c; from El Paso, 43.5c.

'Grandfather' Rights Lost by Change In Operations, Supreme Court Holds

By Teletype

WASHINGTON, April 18. — A motor carrier who was in operation on the "grandfather date" (June 1, 1935) specified in the Motor Carrier Act, but who changed his type of operation subsequently, is not entitled to Interstate Commerce Commission authority to continue operations, the Supreme Court has held.

The opinion was handed down in the case of Dan. E. Maher, Oregon and Washington bus operator, who contended that the fact that he was in operation as a common carrier on the "grandfather date" entitled him to a certificate of public convenience and necessity for his present operations. In 1935 he was operating "anywhere for hire," but since that time has changed his operations to regular service between fixed termini — Portland and Seattle. (NPN March 1, page 17).

This case is regarded as paralleling that of a York, Pennsylvania oil trucker, Gable Transport Co., Inc., in which ICC held (as in the Maher Case) that changed operations precluded the trucker from an oil trucking certificate under the Motor Carrier Act. Prior to the "grandfather date," Gable had been hauling building material, flour and farm produce, but in November 1935, purchased tank truck equipment and began hauling petroleum products. ICC held this, like the Maher change in operations, did not fulfill the "continuous operations" requirements under the M-C act. (NPN Feb. 8, page 13).

Maher appealed to the Courts

after the ICC had ruled against him, contending that the "grandfather" clause said nothing about a change in operations as long as applicant was in "continuous operation" as a common carrier.

In such cases as the two above, applicants may seek ICC certificates on the basis of public convenience and necessity, but must make a showing. Under the "grandfather clause," no such showing is necessary if operation has been "continuous" since the "grandfather" date.

Independent Jobber May Build Refinery Near Madison, Wis.

MADISON, Wis., April 17.—Construction of a refinery here to operate on Illinois crude is being considered by A. J. Fiore, Jr., of the Fiore Coal & Oil Co.

This is the second refinery proposed for Wisconsin, which now has no refineries. The other, a 5000-barrel plant, is planned at Milwaukee by Wisconsin Refining Co., which has already received its state charter.

The plant Fiore has under consideration would have a capacity of 1200 barrels daily. Coke by-products would be distributed by the existing Fiore company, which has a large retail coal and coke business in Madison. Refined products would be marketed in the Madison area.

Site considered for the project is in Summitt, western suburb of Madison, where Fiore now has a bulk plant with about 1,400,000 gallons capacity. If the refinery is built—a decision may be reached within a month—it will be a Fiore enterprise, but a separate corporation from the present Fiore Coal & Oil Co., it was said.

* * *

Illinois-to-Madison Rate On Crude is Filed

WASHINGTON, April 17.—A railroad freight tariff, effective May 6, has been filed with the Interstate Commerce Commission providing for a commodity rate of 15 cents per hundred pounds on crude petroleum shipped to Madison, Wis., from Illinois oil fields—specifically, East Odin, Salem and Sandoval, Ill.

Minneapolis Refinery?

N. P. N. News Bureau

TULSA, April 18.—An eight-cent-a-hundredweight reduction in rail rates on crude from Illinois oil fields to St. Louis, Mo. and Minneapolis, Minnesota Transfer, Inver Grove and St. Paul Park, Minn. is proposed in Western Trunk Line roads in Docket D-37-338. Present rate is 28 cents per hundred pounds.

Rails pointed out in the docket there are three alternatives to be followed in supplying the Twin Cities area with petroleum products, all three involved use of Illinois crude: 1. Construction of refinery in Twin Cities area to be supplied by Illinois crude at reduced rail rate, 2. Rail ship Illinois oil to East St. Louis, Mo., store it there and barge it to Twin Cities for refining, or 3. Rail ship Illinois crude to East St. Louis, refine it there and then barge refined products to Twin Cities.

Rails apparently favor the first alternative. They cite as argument for establishment of reduced rates to Twin Cities area the proposed construction of a refinery at either Inver Grove or St. Paul Park.

Northern Refineries Leased

ALMA, Mich., April 17.—Midwestern Refineries Co. has leased for three years the former Northern Refineries 1500 bbl. plant here.

DEATHS

David L. Jones

David L. Jones, 47, who joined the Standard Oil Co. of Ohio in August, 1905, at the age of 13, died April 11, suddenly of a heart attack. At the time of his death, Jones was credit manager in the Toledo district of the Ohio Standard. He was born in Cleveland and was a life-long friend of W. T. Holliday, president. He served in the World War and was seriously wounded in action.

Surviving are his wife, a son, two sisters and two brothers. Burial was in Toledo.

Walter H. Dickie

Walter H. Dickie, 53, traffic manager of Imperial Oil Limited, died in Toronto April 13. He was associated with the Standard Oil Co. of New York for several years prior to 1912, when he became affiliated with Imperial Oil.

James G. Sutton

James G. Sutton, 68, one of the developers of the southwest Louisiana oil fields, died April 12 at Lake Charles, La. He was president of the J. G. Sutton Oil Co. and the Sutton-Zwolle Oil Co.

Crude Stored as Operators Await May Proration Order

N. P. N. News Bureau

TULSA, April 15.—Allowable production of Texas crude in April probably will average between 30,000 and 40,000 barrels daily more than the 1,386,000 barrels the Texas Railroad Commission announced would be the net figure when it started to write its third order for the month.

This increase is due to the higher allowables granted the past week to a number of fields, following written protests of operators in those districts that the allowables set in the order issued April 7 would cause waste.

The U. S. Bureau of Mines had estimated demand for Texas crude in April at 1,412,000 barrels daily. The increases that have been granted in the most recent order, therefore, will bring daily average production in Texas for the month up to the level of the Bureau's estimate, if it does not actually exceed it.

There was some shifting of purchases in a few Texas fields the past week, in order that some companies which found themselves long on crude as a result of the increases in allowables would not be burdened. This shifting apparently has worked out satisfactorily since late reports indicate no "soft" spots at present.

Now Storing Crude

It is reported, however, that a majority of the larger companies now are storing a portion of their oil and some operators believe they are willing to increase their storage somewhat. In other quarters, however, it is believed purchasers are following this policy only temporarily, in the hope that the statewide proration hearing at Austin April 17 will develop sufficient evidence to allow the commission to avoid the situation that developed over drafting the April order, when it undertakes to prepare an order for May.

It will be recalled that the first order for April increased the allowable production to the point where purchase is protested. When the commission in its second attempt went to the other extreme and cut allowables drastically, producers flocked to Austin by the hundreds to protest. So the commission felt its way back pretty near middle ground with its third order.

While the commission was busy working out the new April allowables among the various fields, Commissioner Jerry Sadler, who for the time being at least is considered in the oil industry in the southwest as "the commission" just as Commissioner E. O. Thompson held that "title" until the first of this year, issued a statement calling for a big representation at the hearing at Austin the 17th.

"Expert advice, information and testimony are needed, in the place of criticism", Sadler said, "for we are at the crossroads, with serious phases to be dealt with, and federal supervision just around the corner unless there is complete co-operation. . . .

"While it is an economic truth that it costs more to drill a well 8000 or 10,000 feet deep and that, as a consequence, such operators may have to have more allowable in order to pay out, let someone point out why this should operate against an operator who sunk a well but 1000 feet deep.

"The first operator, the deep driller, realized before he started what he would be up against, and wants the state government to help him out, and it assuredly has, to the detriment of the operator who was not required to use such a large financial outlay. But both of them are in the oil business and both are entitled to the protection and co-operation of the commission, and this is a problem on which operators, engineers and economists should throw some light."

Hits Oil Compact

Sadler apparently took a little jab at his colleague, Col. Thompson, who is chairman of the Interstate Oil Compact Commission, when he said, "We receive oil from Louisiana which always has been lukewarm over proration and there is no proration law whatever in California, Illinois and some other states. The interstate compact is a splendid theory and it is a pity it doesn't work, or at least work to such extent that Texas could get some benefit out of it."

A group of operators in East Texas, meanwhile, have undertaken the formation of the East Texas Oil & Gas Assn. to represent operators there as a whole in proration matters. Such an association was urged following a meeting at Kilgore last week of several score operators and business men, called to approve Chairman Lon Smith's and Commissioner Sadler's efforts to provide a "more equitable distribution of allowables among Texas fields."

Californians Warned Against Overdrilling

LOS ANGELES, April 15.—A year ago this month, R. K. Davies, vice president, Standard Oil Co. of California, told a meeting of the Pacific Coast district, production division of the American Petroleum Institute, that the disturbed balance between crude supply and market demand did not add up to "Dollars and Sense"—that capacity to produce had far outrun capacity to consume.

Since then the breach between supply and demand in this territory has widened rapidly, adding some 20,000,000 barrels storage, and two speakers at the 1939 spring meeting of this API division, held in Los Angeles April 11, took the occasion to warn producers against practices which would not repay investments.

Speaking on "The Evolution of Proration" at the banquet session, Col. E. O. Thompson, member of the Texas Railroad Commission and chairman of the Interstate Oil Compact Commission, pointed out that efforts to prevent waste in oil and gas production were started with no map or compass to steer the course.

California producers, who are now watching the legislative course of a state oil and gas conservation bill, were told that many who had well-intentionedly fought proration in Texas were now enthusiastic in their co-operation with state officials.

Estimating that the per-well oil revenue in Texas at $5094 for 1939, Thompson pointed out that his indicates ten to 15 years would be required for new wells to pay out.

"However, the increase in wells in 1940 and 1941," Thompson continued, "will almost certainly exceed the growth of any market that we can now expect, and one must either assume an increase in price or accept the fact that the per-well revenue will drop again in 1940 and still further in 1941. A very slender margin is left in 1939 for capital return. By 1941, this may easily have disappeared."

Real problems for the oil industry will come in all their fury in 1940 unless very prompt steps are taken to change the present practice of drilling wells so close together, Thompson added.

Compared to the maximum of 20 barrels daily and six-day production week for Texas' 30,000 wells, Thompson said the California voluntary quotas reaching 250-300 barrels per day were "excitingly high."

Concluding, Thompson urged California producers to get together with other states under the interstate compact and work out their common problems on the basis of reserves and markets at home.

Pay-Out Long Delayed

In a paper on "Economics of Deep Drilling in the San Joaquin Valley," John F. Dodge, professor of petroleum engineering at the University of Southern California, called attention of operators to the necessity for considering the economic advisability of deep drilling under present conditions of overproduction, weakened price structure and curtailment.

Accepting the premise that the major portion at least of the investment in a well must be returned during its flowing and gas lift life, the problem was declared to be one of investment, operating expenditures, and probable returns.

Using a flat cost of $20 per foot—considered not out of line in view of average deep hole experience—the drilling cost of a 13,000 foot hole was shown as $260,000. Adding a 15 per cent overhead cost, 10 to 25 per cent for "supplementary development" expense, the total capital investment was estimated at not less than $350,000 for the deep well.

Assuming the maximum allowable production under curtailment of 300 barrels a day, the first year's output would be 108,000 barrels, of which only 75 per cent, or 81,000 barrels would belong to the lessee—on the basis of one-quarter royalty, which is not uncommon with these deep holes in the San Joaquin Valley.

At an estimated value of production at $1.40 per barrel and allowing 8 cents a barrel additional for gas and gasoline value, the producers gross revenue was shown as $113,400 for the year. However, net return to be applied against capital investment would be only $84,900 after subtracting $7500 for production costs during the year and $21,000 for interest on well investment of $350,000, it was said.

It was then pointed out that it would take this 13,000-foot well over four years flowing at 300 barrels per day to return its capital cost. In areas where maximum permissible output per well is only 250 barrels a day—as in the Greeley field—this payout time and the necessary recovery would be increased.

Where sands are thick, say around 200-feet, the speaker said a recovery of 480,000 barrels from a well on twenty acre spacing was not at all impossible for the flowing part of a well's life where sand conditions and other factors are favorable, but with 50 feet of sand or less as found in some Valley fields, the recovery of such an amount of oil by a flowing well was declared highly improbable.

Japan's Takings from Gulf Cut into California Demand

N. P. N. News Bureau

LOS ANGELES, April 15.—Realignment of demand for oil by Japan "may have more than passing significance for California oil operators," according to Rush M. Blodget, executive vice-president of Oil Producers Agency of California, commenting on press reports that Japanese tankers enroute to and from Gulf Coast points had stopped at California ports only for bunkering.

Japanese demand for California oil, amounting to over 31,000,000 barrels in 1938, has been the "safety valve" which has kept production from completely flooding the West Coast market, Blodget pointed out. However, this demand has the element of uncertainty and its sudden removal would confuse California markets, he added.

Blodget called attention to Japan's law requiring oil companies doing business there to construct facilities for storing six months' supply, but, with demand extraordinarily high because of the "warlike activities in the Orient," he said there was some question as to whether stored supplies were ever brought up to the required level.

He cited the opinion of one West Coast expert on foreign trade who predicted that Japan's takings of California oil in 1939 would average at least 20,000 barrels daily below the 86,000-barrel daily average for 1938. This expert, he added, feels that Japan's storage is comparatively filled and that imports now are just enough for current actual consumption on the basis of present conditions.

Japs 'Fussy' About 'Specs'

Japan, this expert also pointed out, has become "fussy" about the kind of crude it will buy, in some instances demanding an aviation-gasoline crude which few California fields can supply. A crude containing a minimum of 15 per cent of aviation gasoline which will go to 92 octane with the addition of 0.1 per cent lead. Relatively little California crude will meet these specifications, it was said.

However, crude from the Sinto area in Texas, loaded at Corpus Christi, would meet Japan's specifications, according to information here. And that may explain the Gulfward movement of Japanese tankers.

But it is not to be inferred that all of the Japanese demand will be shifted to the Gulf Coast.

Japan took a daily average of 69,027 barrels of California crude and products during the January-March quarter of 1939 as compared with 94,180 barrels in the same period of 1939—a decrease of nearly 27 per cent, according to figures compiled by the Oil Producers Agency.

Indications are that April will be a month of heavy exports from California, with more than 380,000 barrels shipped to Japan during the first week from Los Angeles Harbor, alone. This may, however, have been due to the incidence of tanker loadings, rather than demand.

Japanese Bid Openings

Reports received here indicate that bids by California companies to supply Japan with nearly a million barrels—ten cargoes—of aviation-type crude between now and November, showed practically no change from previous quotations on 92-octane crude (specifications mentioned above) but a considerable drop in the low bidder's ideas of values for crude guaranteed to produce 89-octane gasoline.

Awards on five cargoes of the higher-octane crude were reported at prices which averaged $1.46 a barrel, California ports, exclusive of commission, which compares with a previous award on the same type oil of about $1.47. Standard Oil Co. of California was understood to have been awarded three cargoes of this oil, with Tide Water Associated Oil Co. and General Petroleum Corp., obtaining one each.

Richfield Oil Corp. was reported low bidder on five cargoes of the lower octane crude at 97 cents a barrel. Other bids on this oil were reported ranging at $1.11 to $1.32.

Federal Control Threat Looms Again, NPA Told

Oil Resources Report Seen As Opening of New Doorway

By V. B. GUTHRIE
N.P.N. Managing Editor
N. P. N. News Bureau

CLEVELAND, April 15.—"There's no such thing as a little federal regulation. It's just like being a little pregnant."

With this epigram, Col. Ernest O. Thompson, member of the Texas Railroad Commission and long an exponent of oil conservation with the states as the regulatory agencies, summed up his presentation of the oil states' viewpoint on the recommendations on oil in the recent report of the National Resources Committee, speaking at the semi-annual meeting of the National Petroleum Ass'n. here.

W. T. Holliday, Cleveland, president of the Standard Oil Co. of Ohio, and other speakers from the oil industry itself, at a panel discussion on the report, criticized it as ambiguous as to the role it was proposed the federal government take in any national oil conservation program.

"If the recommendation is for federal economic planning, then it is a real issue not only for oil but for other industries," said Holliday. He questioned whether any "dilemma" existed in the oil industry that warranted any consideration of abandoning the system of free enterprise under which the industry had made such tremendous progress in the public's behalf.

The federal viewpoint on the National Resources Committee's report was presented, at the session of the N.P.A. meeting April 13, by Dr. John W. Frey, associate director of the petroleum conservation division of the Interior Department.

The report is the result of a request made by President Roosevelt about a year ago that a study be made of the energy sources of this country and their prudent utilization and conservation. The study was made by an Energy Resources committee made up of experts in various government department and outside experts and was presented to the President early in the year through the National Resources Committee, made up among others of the secretaries of War, Interior, Agriculture, Commerce and Labor and the Works Progress Administrator. It was sent by the President to Congress with the statement that it was a framework of reference for legislation affecting the natural resource industries discussed.

Insofar as it relates to oil, the report, after setting forth the federal government's interest in the oil industry, recommended that the federal authorities, in co-operation with the states and industry, establish standards for the production of oil and gas designed to prevent waste, take the necessary means to prevent the movement in interstate or foreign commerce of oil produced in violation of such standards, and create an "appropriate" federal administrative agency.

Dr. Frey, himself a member of the Energy Resources committee, said the committee was against any recommendation that the federal government attempt to usurp any authority of the states, but that it was its opinion that the federal government and the oil producing states should work together towards the solution of a common problem.

In the panel discussion at the NPA meeting, Holliday said that all oil men were in favor of conservation practices and policies and that the main issue was how the objectives set forth in the report could best be achieved. Under federal economic planning, which he said he feared was contemplated in the report, could the supply of petroleum be increased, he asked. Pointing out that the oil industry had been quick to discover new technical methods and to put them into immediate practice because of the highly competitive nature of the industry, he questioned whether more oil could have been produced in the past under federal economic planning.

Made Same Mistake

Referring to the now-criticized "law of capture" principle of oil production which the oil companies formerly followed, where it was believed the most oil could be produced if it were taken from the ground as quickly as possible, Holliday said that this principle had been recognized by the government, through the courts, and that it showed governmental agencies are subject to the same mistakes as individuals. As showing the "inconsistency" of the federal government, Holliday said it seemed logical that the government, if thinking only of the conservation of petroleum, would have encouraged the importation of petroleum.

"The biggest pay dirt that has been made, as far as conservation of oil is concerned, is in technologic improvement," Holliday stated, "and this does not come through the dead hand of government control." He said the principal contribution to the conservation of the country's supply of petroleum had come from the industry itself through finding the methods for securing greater yields of gasoline from crude oil.

In an industry, competition must be free both from government and from any group of men within that industry, Holliday said, "In the progress and development within an industry nothing can take the place of the initiative of a mass of individuals." He said that the history of the oil industry presented one of the greatest achievements of free enterprise and that he feared any gradual getting away from this would lead down the road of federal economic planning.

Sees Coal's Hand

Col. Thompson said that the more he studied the Energy Resources Committee's report, the more he was impressed with the influence of the coal problem upon it.

"If the oil industry lets itself be brought into such a general high sounding control problem," he stated, "the first thing you know someone at one of those Hearings they are so anxious to be holding to hand down findings, will order and decree that you can only drill so many oil wells this year and then only after a permit of convenience and necessity has been gotten, after notice and hearing, with coal and water energy interests saying do not drill for oil because the coal or water power interests can supply that energy.

"Such talk has been heard in the past about coal going to be exhausted. Now they are stuck with oversupply and seem to want to hold back the oil industry in their favor."

U.S. Oil Industry Could Fill War Needs

Referring to the additional demands that might be made on the oil industry in time of war or any national emergency, Col. Thompson stated that stress is laid in the report on recent U. S. Supreme Court decisions to the effect that the exertion of federal power does not have to wait the disruption of services essential to the maintenance of interstate commerce and that the proponents of federal oil control therefore, go on to say, take over oil for national defense.

"Here is one industry, with its oil producing, transporting and manufacturing departments already geared up to wartime pitch," said Col. Thompson. Referring to the statement in the report that 800,000 barrels of crude a day additional would be needed for war consumption, he said that the industry was ready to produce that additional amount of oil and that it could come from Texas alone if necessary.

"Is this really and truly not just one more move toward a totalitarian state?" asked Col. Thompson. "Are we not about to be plunged into complete government ownership, first by study and reports, then by just a little assistance to the states and then just a little insistence and then dictation, then regulation, then complete nationalization and government ownership and control?"

B. L. Majewski of Chicago, Deep Rock Oil Corp., another member of the panel discussion on the oil conservation report, said that it was economic waste to sell products from a barrel of crude at less than the cost of producing the crude. "How is the government going to remedy that except through price control which would affect every small oil company?" he asked.

Other members of the panel discussion were E. C. Breene of Oil City, Pa., oil producer; Francis E. Heath, production engineer with the Sun Oil Co. in Texas and H. T. Ashton of St. Louis, Lubrite Division of the Socony-Vacuum Oil Co.

'Divorcement' would Hit Small Refiner—Blazer

Tighter Pipeline Regulation by ICC Suggested as 'Remedy' at NPA Meeting

N. P. N. News Bureau

CLEVELAND, April 14. — Proposed legislation in Congress providing for the divorcement of pipeline operations from other phases of an integrated oil company's business, would destroy many of the independent refining units which afford the greatest protection to independent producers and jobbers, Paul G. Blazer of Ashland, Ky., president of the Ashland Oil & Refining Co., told the National Petroleum Assn. at its 36th semi-annual meeting here April 13 and 14.

Blazer said that more and more the larger oil companies were pulling out of the old oil producing fields and selling their stripper wells and gathering lines to some smaller company which could operate them more economically because of lower overhead costs. Often, he said, there was a financial tieup between the pipeline system in such fields and a local independent refiner who, in turn, supplied gasoline to independent jobbers and trackside operators.

"The ownership of the pipeline gathering system is a most important part of such an integration and its divorcement would be a serious blow to the small integrated companies which, because of this integration, afford a more dependable source of supply to independent gasoline distributors than would otherwise be possible," said Blazer, who spoke April 13 on The Problems of Small Enterprises in the Oil Industry.

It is becoming increasingly apparent, he stated, that the independent gasoline distributors cannot depend on obtaining gasoline from low-priced crude oil from flush fields, as was formerly the case when the new fields were usually in the hands of independent operators who did most of the wildcatting. At present, with the effective use of the seismograph by the larger oil companies, they now control most of the important new fields, he brought out, and the independent refiners do not have the chance to establish themselves there, as they once did.

Names A Remedy

"It is generally conceded," Blazer said, "that the manner in which many of the major oil companies have operated their trunk pipelines has afforded just cause for complaint by the non-integrated units; but the way to correct that situation is not by the legislation now before Congress, requiring divorcement of ownership, but by prevailing upon the Interstate Commerce Commission to prescribe more reasonable rules covering tenders of crude oil or gasoline, as the case may be, and to fix rates which will yield only a reasonable return on the investment."

Such a program, requiring no additional legislation, would take away from the major oil companies any unreasonable competitive advantage they now have by reason of their ownership of crude oil and gasoline pipelines, he said.

Blazer said he hoped the major oil companies would recognize the independent refiner was entitled to have a market outlet distinctly his own, in commenting on the fact that the smaller refiners, who formerly had the business of the independent jobbers, now have lost a good share of that to the major companies and have replaced it with the business of the trackside stations.

"Some such market is essential to the independent refiners if they are to continue to afford the competition which is the only insurance policy of the big companies against a public impression of monopoly which might easily result in a public utility status or even government competition or ownership," he stated.

"The oil industry would be in a much safer position if such a large part of the refining capacity of the country were not in the hands of so few companies."

Commenting on the current rate of earnings of the major oil companies, Blazer said their earnings report would look a lot better if the heads of those companies would tell their respective sales departments that their output for the coming year would be reduced and that it would be necessary to get rid of the least profitable 10 per cent of their business.

Discusses "Expropriation"

Donald R. Richberg of Washington, representative of American and English oil companies whose properties were "expropriated" by the Mexican government in March a year ago, spoke at the April 14th session of the NPA meeting on the negotiations he has recently been conducting with President Cardenas in an effort to find some approach to a basis for settlement.

He defined the Mexican oil problem as; "an inflammable explosive compound of political, social and economic enterprises, saturated with labor controversies and revolutionary theories, superheated with conflicting emotions and exuding clouds of statistical misinformation and legalistic arguments which make clear analysis of the essential elements of the problem well nigh impossible."

Richberg said the object of his negotiations with the Mexican government was to explore the possibility of agreement upon a long-term contract, under which the respective companies would be able to compensate themselves out of the efficient operation and further development of the expropriated properties, with mutual assurances of satisfactory labor conditions and proper government revenues. He said he believes such an arrangement would bring about an immediate economic improvement and the eventual complete nationalization of the entire industry, without imposing any risk or financial burden upon the Mexican government and also without the government or the oil companies receding from their major positions as to the legality of the expropriation or the value of the properties.

Richberg said that, since returning to Washington from Mexico, he had found it necessary to combat in various ways the private and public activities of influential persons, both in the U. S. and outside, who desire to prevent an amicable settlement of controversies between this country and Mexico.

Aviation's Research Needs Outlined

Speaking on "Shall America's Aviation Set the Pace?", at the April 14th session, Col. Edgar S. Gorrell, president of the Air Transport Assn., of America said that, through lack of properly co-ordinated research in aviation, this country in 1938 relinquished leadership in military aeronautics to at least one and perhaps to two or more European nations.

He referred to the research work which has been done in the production of a high octane, high boiling point aviation fuel which will combine the safety features of both high octane gasoline and of diesel fuel. The work on this fuel, he said, had been accompanied by efforts to eliminate the conventional carburetor and substitute more satisfactory direct injection. On lubricating oils he said one avenue of research was the relatively low oxidation resistance of oils used in aircraft engines.

Opening the NPA meeting, President Charles L. Suhr of Oil City, Pa., chairman of the Pennzoil Co., urged its members to use the association's statistics as the basis for more sound operations of their individual plants. "We have had in the past altogether too many peaks and valleys," he said, "and this has been harmful not only to our own businesses but to many of our independent jobber customers upon whom the Pennsylvania industry has always relied and must rely for a major share of its trade."

Robert E. Freer of Washington, chairman of the Federal Trade Commission, speaking at the April 13th session, outlined the province of the commission in preventing unfair business practices and, in conclusion, urged business statesmanship upon industry generally to preserve the competitive system.

"Government protection of competition works from the outside", he said. "Its examination of business practices is aimed to enforce only such rules of conduct as are required to protect the freedom of the market. Government control on the other hand generally penetrates the interior of business and tends to impair the exercise of private initiative."

Refiners are told Synthetic Catalyst is 'Best'

Crowd Jams NPA Meeting as W. W. Gary Discusses Angles of Catalytic Refining

By ARCH L. FOSTER
N.P.N. Technical Editor

CLEVELAND, April 13. — Catalytic cracking units of less than 5000 barrels per day charging capacity are probably not yet economically practicable for the refinery, W. W. Gary of M. W. Kellogg Co. told the refiners of the National Petroleum Association at its meeting here today. So many factors are involved in the decision as to whether or not catalytic cracking is economically justified in any given case that generalizations can hardly be made, he said.

Each individual case must be studied in detail, Gary pointed out, to evaluate all factors involved. These factors include the refiner's charging stock, the type of gasoline he wants to make, the thermal cracking equipment he already has installed, the quality of the gasoline produced by that cracking capacity, the qualities of the straight-run gasoline he makes and many others must be studied before an answer can be reached.

Catalytic reforming of naphthas appears to offer the greatest and most immediate application of catalysis to refining, Gary believes. Catalytically reformed gasoline can be produced up to 90 octane number, and aviation gasoline can be made direct from the charge stock, he showed, with yields of 73-75 per cent and sulfur of less than 0.1 per cent, even from high-sulfur charging stocks. Low equipment and operating costs are practicable with catalytic reforming; a long catalyst life and a very short catalyst regeneration time is required with the types of synthetic catalysts now available. Some of these catalysts require only one hour for regeneration after hundreds of hours on stream, he stated.

Catalytic reforming can produce up to 20 per cent more gasoline of the same octane number than can be made by thermal cracking, Gary reported. In many cases catalytic cracking is the cheapest way to make octane numbers, no matter what octane level is desired or what the yields may be for any given octane number; in most cases the greater part of the equipment now used for thermal reforming can be used for the same purpose in the catalytic plant, he added.

Catalytic Polymerization

Catalytic polymerization of refinery gases by the methods which Gary discussed is also growing in importance, is one of the major tools which most refiners can adopt without excessive capital outlay. Olefins such as butene can be produced by catalytic reforming or cracking, suitable charge for polymerization units; the polymer thus produced can be hydrogenated to give 90-100 octane number aviation fuel. In the main, existing refinery equipment, if available can be used for the major portion of a catalytic polymerization unit, he said, and because of relatively low pressure-temperature conditions the equipment cost is not excessive.

Pressed to give estimates of costs for catalytic polymerization and cracking units, Gary pointed out that individual conditions vary so widely that any definite figures would in nearly all cases be misleading. Setting up the limits of $50 and $300-500 per barrel of daily charging capacity, he stated that the cost would be somewhere between those limits, but closer values could not in justice be given.

Several oil companies have pooled resources, Gary announced, in studying this tremendously important field of catalysis. Months have been spent in intensive work to develop the various phases of the field, as a result of which five processes have been developed. These processes include cracking of gas oils; reforming of gasolines and naphthas; gas polymerization; desulfurization; isomerization and other types of reactions by which less desirable products are converted into those which meet the present requirements of industry.

Synthetic Catalysis 'Best'

Synthetic catalysts were characterized by Gary as the "best catalysts known". These are prepared by chemical methods, as differentiated from others made primarily by mechanical treatment of natural products, such as alumina catalysts from bauxite, and from other mineral products which are in use. A poor catalyst depreciates seriously the value of a plant, it was pointed out. The catalyst cost is an additional refining cost to the operator, and its unit cost per barrel of product made must be low in order to make catalytic operations economically feasible. These synthetic catalysts, he said, can be revivified thousands of times without any appreciable loss in efficiency; in this they differ from "natural" catalysts, he claimed, which gradually lose efficiency with repeated regenerations. The volume of synthetic catalyst required for a given capacity is only from one-fourth to one-third of that of the "natural" catalyst, he stated, which affects a natural saving in cost of equipment required to house the catalyst. Continuous operating methods are used with these catalysts, running for hundreds of hours in many cases, with only an hour required for revivification of catalyst, to burn away the accumulated carbon deposits.

The catalytic cracking unit designed for recycle operations is a great deal more expensive to install than that for a once-through system, Gary said. Decision as to which operation will be employed will depend on the specific conditions obtaining in the individual refinery situation. Because the bottoms from catalytic cracking are very easily cracked thermally, discussion brought out that in most cases the catalytic unit will probably be used by most refiners as a once-through operation, with thermal cracking to continue and complete the cracking cycle on the catalytic bottoms.

High Blending Value

The blending octane number value and the lead susceptibility of catalytically cracked and reformed gasoline are high, it was disclosed. A blend of equal portions of straight-run Mid-Continent and catalytic gasolines will give a fuel of slightly over 70 octane number, while average thermally cracked gasoline with straight-run Mid-Continent shows a rating of about 66-77, Gary reported. The overall octane number of refinery gasoline can be made as high as 80, he stated, although this is not now considered feasible. Most refiners do not need that high an average octane number he said, but the possibility exists if and when fuel requirements reach that point.

Catalytic gasoline will give 10-12 octane numbers higher rating in road performance when compared to leaded gasoline of the same laboratory rating, Dr. Gustav Egloff of Universal Oil Products Co. said in discussing this field. The present standard ASTM Motor Method penalizes catalytic gasoline severely in comparison with its performance in the car, and future developments may be expected to improve correlation between road and laboratory octane numbers, in the opinion of technologists present.

Two statements were made by Gary which are of particular interest. Stocks which are most refractory in thermal cracking are usually the easiest to crack by catalytic methods, he said. Thus by a suitable combination of catalytic and thermal methods each stock may be cracked by the process which give the optimum results. When cracking thermally the high sulfur bottoms from catalytic operations, the sulfur appears to stay in the thermal unit bottoms, giving gasoline exceptionally low in sulfur, in all cases below 0.1 per cent sulfur.

Experiments have also shown that materials normally considered non-catalytic in nature, materials such as broken brick or stone, when put into the system in place of the catalyst, gave as high yields in cracking under the given conditions as did the same stock cracked by means of the catalysts which have been developed. No satisfactory explanation of this phenomenon was forthcoming at the meeting. Delayed coking methods give good yields with catalysts, he said, and that type of operations offers good possibilities for future cracking development.

Texas Senate Votes To Stay in Compact

AUSTIN, Texas, April 15.— Texas virtually was assured of remaining in the Interstate Oil Compact for another two years when the Senate April 13 passed the House bill extending participation in that organization. The bill now is before Gov. Lee O'Daniel, who has indicated he favors the state's continued participation in the compact.

Illinois now is the only one of the six states at present in the compact which has not extended participation for the next two years. There have been reports, meanwhile, that Louisiana and Arkansas will become members in the near future by executive proclamation.

Around THE MID-CONTINENT

. . . By ALLEN S. JAMES

The rancher who owned the land under which was found the oil pool that started the proration movement in Texas died last week.

He was Ira G. Yates, who spent all of his 79 years in Texas and for whom the mammoth Yates field in Pecos county was named. He was one of the few remaining large scale ranchers who were made wealthy by discovery of oil pools under their grazing lands.

Left an orphan at 12, the only "formal" education Yates ever received was during a few months when he was "laid up" at his employer's ranch house with an injured leg, the result of his horse stumbling and falling on him. The governess for the employer's children taught Yates to write while he was confined to bed. His education in the hard school of ranching, however, was complete.

Yates had made and lost two or three comfortable fortunes before he traded a store he owned for some land "west of the Pecos river" back in 1916. He prospered in a modest way and acquired eventually several thousand acres.

He leased some of his land to an oil company but had considerable difficulty getting them to drill a test. The company "farmed out" an interest to another company on condition that it drill the well.

The story is told that Yates and one of his sons were watching the drilling crew one day back in 1926 when suddenly the rancher, then 67 years old, said suddenly; "son, we better get out of here—something is going to happen."

The two started running and within a minute or two, according to the story the "wildcat" well blew in spraying oil for a quarter of a mile. Today the Yates pool has 550 wells and is given a potential rating of over 8,000,000 barrels a day. The largest well was listed as being capable of producing in excess of 100,000 barrels daily when it was brought in. This one field's estimated crude reserve at present is approximately 375,000,000 barrels.

● Tulsa Buses Promote New York World's Fair

A story in the Tulsa newspapers was required last week to explain to Tulsans that (1) they had not been transplanted suddenly to New York, or (2) that some of New York's buses had not strayed from home and finally joined those furnishing Tulsa's transportation.

Tulsa people, accustomed to waiting for familiar yellow and white buses, were startled to have an occasional bus of the same colors but with the large letters "Welcome to New York" painted on its sides pull up to the bus stops. It took some persuasion on the part of the drivers to get some of the more timid Tulsans aboard these buses.

The papers explained the Tulsa bus company had sold a number of its larger vehicles to the New York World's Fair organization, that they had been repainted and lettered to specifications, but that the company was keeping them in service in Tulsa until time for delivery to New York.

● Petroleum School Holds Open House

The college of petroleum engineering at University of Tulsa held open house April 14 to show hundreds of Tulsans and out of town visitors the "inside" of one of the most rapidly growing colleges of its kind in the country.

For many Tulsans who attended the open house it seemed only yesterday that Kendall College was a little denominational institution in the small community of Kendall, east of Tulsa's city limits. There was considerable pasture land between the then Tulsa and Kendall.

Tulsa grew rapidly, however, and soon absorbed Kendall. Then the name of the college was changed to Tulsa University and a number of wealthy oil men living in Tulsa and Oklahoma opened their check books and began helping push the university to the front.

Biggest push, as far as the college of petroleum engineering, was concerned came when Waite Phillips gave the university the Phillips engineering building.

Tulsa Grand Jury Indicts 140 in Strike at Refinery

(*Continued from page* 9)

Dixie Gilmer revealed that for the past three months or more he had been given the services voluntarily of a small group of private citizens who had acted as investigators in the strike situation. He lauded the action of these citizens as an outstanding example of good citizenship. He said their names would not be made public.

Grand Jury Reports

That portion of the grand jury's final report pertaining to the strike investigation stated in part:

"Concerning the trouble which occurred at the refinery of the Mid-Continent Petroleum Corp. . . complaint was made. . . that a number of acts of vandalism and violence occurred . . . and that the personal property of the Mid-Continent Petroleum Corp. was seized and held unlawfully by a large group of individuals acting without authority of law; and that a mob of men had collected inside the refinery and remained and held the property of this concern for some six hours, having refused to disperse after having been pleaded with and ordered so to do by A. Garland Marrs, sheriff of this county.

"Furthermore, that at this time or shortly thereafter, another and different mob containing some of the same persons above mentioned, being armed with clubs, sticks and other various weapons of offense, formed . . . at the main gate . . . and successfully prevented persons from the right of ingress and egress . . . and prevent food and supplies from being taken in to the men working inside this refinery, and some of whom . . . were held in said refinery without food for a period of more than 24 hours, being prohibited through fear and intimidation of this mob from coming out of this refinery.

"Also it was complained that the unlawful taking over of this personal property . . . particularly the manner in which it was done . . . constituted a hazard and danger of fire and explosion of imminent danger to lives of hundreds or possibly thousands of people.

"As a result of this complaint . . . we made a painstaking, thorough and unbiased and searching investigation into the various acts alleged to have been committed and we are positively convinced that these acts so complained of were so committed. . . .

"In pursuance of our inquiry into this matter and our findings as a result thereof, we have returned three indictments charging 140 offenses. . . ."

In Session Two Weeks

The grand jury was in session for two weeks and a large number of witnesses were known to have been called before it in connection with the strike.

The National Guard troop continued to patrol the military zone around the refinery in West Tulsa while strikers continued to picket stations handling Mid-Continent's products, and the corporation's office building in downtown Tulsa.

Mid-Continent officials are reported to have agreed to an arbitration plan suggested sometime ago by Gov. Leon C. Phillips but the union's members have not announced as yet their willingness to accept the proposal.

'Gas' Stocks Turn Upward

N. P. N. News Bureau

NEW YORK, April 18.—The recent downward trend of gasoline and gas and fuel oil stocks was reversed in the week ended April 15, and refinery crude runs were higher than in any week during the last 17 months, according to report of the American Petroleum Institute today. Gasoline stocks increased 458,000 barrels; gas and fuel oil stocks rose 599,000 barrels. Gasoline production at refineries reporting this item to the Institute increased 371,000 barrels.

Refinery crude runs averaged 3,330,000 barrels daily, up 185,000 barrels from the week ended April 8, and the highest since the week ended Nov. 5, 1937 when runs were 3,388,000 barrels daily.

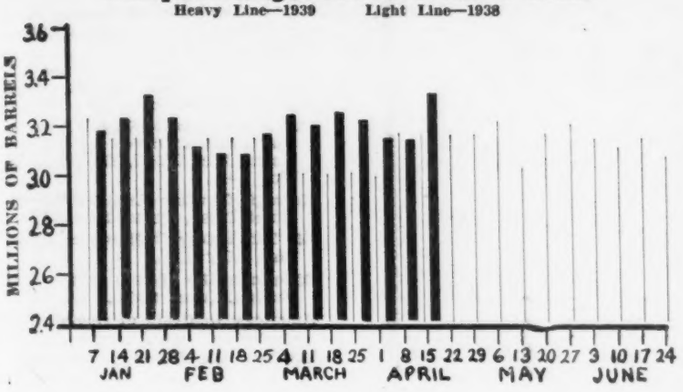
Texas-Gulf and North Louisiana-Arkansas refiners reported slightly reduced runs but increased crude throughput was indicated for every other refinery district. The largest increase was in California where runs jumped 58,000 barrels to 496,000 barrels daily, an increase of 7.8 per cent in plant operations for that district. Other large increases in average crude runs were 37,000 barrels in the Indiana-Illinois-Kentucky district and 30,000 barrels in the East Coast district.

The Institute's estimate of gasoline stocks April 15 totaled 87,071,000 barrels, 4,118,000 barrels under stocks on the same date in 1938. Last week's increase of 458,000 barrels compares with a decrease of 528,000 barrels in the comparable seven-day period a year ago.

Latest Oil Industry Statistics

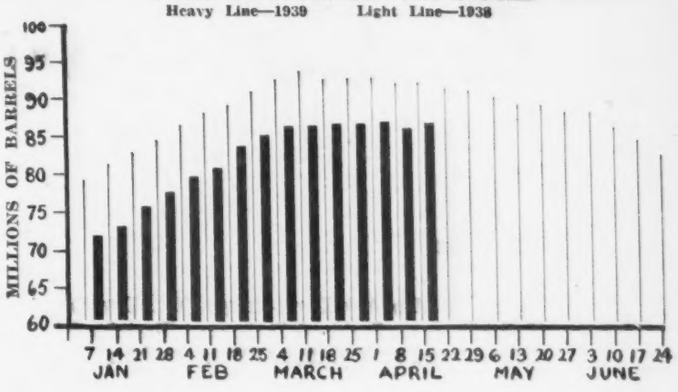
Daily Average Crude Runs to Stills

Heavy Line—1939 Light Line—1938



Total U. S. Motor Fuel Stocks

Heavy Line—1939 Light Line—1938



A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 42 Gallons Each)

Districts	Per Cent Capacity	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		(a) Gasoline Production Week Ended		Stocks (Thousands of Barrels) Total Finished and Unfinished Motor Fuel(b) Week Ended		Stocks of Gas and Fuel Oil — Gas Oil and Distillates Week Ended		Residual Fuel Oil Week Ended		Total Week Ended	
		April 15	April 8	April 15	April 8	April 15	April 8	April 15	April 8	April 15	April 8	April 15	April 8	April 15	April 8
East Coast	100.0	520	490	84.6	79.7	1,477	1,475	21,934	22,096	2,301	2,543	3,527	3,479	5,828	6,022
Appalachian	85.9	108	92	84.4	71.9	393	351	3,482	3,397	240	247	491	482	731	729
Ind., Ill., Ky.	89.5	449	412	87.2	80.2	1,763	1,755	15,022	15,095	1,940	2,086	2,733	2,645	4,673	4,731
Okla., Kans., Mo.	81.6	272	260	79.5	76.0	(c)951	(c)880	7,747	7,863	1,029	1,029	2,864	2,905	3,893	3,934
Inland Texas	50.3	119	100	74.8	62.9	517	436	1,628	1,637	265	266	1,466	1,483	1,731	1,749
Texas Gulf	89.5	789	793	88.2	88.6	2,527	2,563	10,655	10,079	2,924	2,737	4,623	4,350	7,547	7,087
La. Gulf	97.3	142	128	97.9	88.3	340	311	2,822	2,628	792	731	796	647	1,588	1,378
No. La., Ark.	55.0	41	43	74.5	78.2	107	108	535	565	237	236	539	533	776	769
Rocky Mt.	54.2	50	48	78.1	75.0	183	199	1,819	1,864	111	116	631	616	742	732
California	90.0	496	438	66.6	58.8	1,502	1,311	16,227	16,219	10,333	10,261	86,106	85,957	96,439	96,218
Total Reporting	85.8	2,986	2,804	81.5	76.6	9,760	9,389	81,871	81,443	20,172	21,252	103,776	103,037	123,948	123,349
U. S. Total (d)		3,330	3,145					87,071	86,613	20,722	20,802	106,076	105,397	126,798	126,199
U. S. Total, 4-15-38(d)		3,189						91,189		19,427				124,811	

(a) Includes straight-run, cracked and natural blended.
(b) Includes stocks at refineries, in bulk-terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis.

Trends of Basic Figures

	April 15	April 8	April 15, 1938
Crude Production (Bbls. daily)	3,494,500	3,443,900	3,385,400
Crude Imports (Bbls. daily)	57,570	123,140	52,280
Crude Runs to Stills (Bbls. daily)	3,330,000	3,145,000	3,189,000
Gasoline Stocks (Bbls. total)	87,071,000	86,613,000	91,189,000
Gas and Fuel Oil Stocks (Bbls. total)	126,798,000	126,199,000	124,811,000

Crude Oil Production for the U. S.

(American Petroleum Institute figures)

	Week Ended April 15 Barrels	April 8 Barrels	April 1 Barrels
Oklahoma City	101,700	114,400	85,000
Total Oklahoma	436,500	452,250	422,200
Kansas	169,950	153,800	167,000
East Texas	447,000	447,100	372,700
Total Texas	1,435,150	1,390,350	1,334,450
Total Louisiana	264,850	265,850	260,400
Illinois	165,000	166,500	169,300
California	628,200	627,000	611,500
East of Rockies	2,866,300	2,816,900	2,746,700
Total U. S.	3,494,500	3,443,900	3,358,200
Crude Imports	57,570	123,140	73,860
Total New Supply	3,552,070	3,566,040	3,432,060

Montana Road Meet Set for Sun Valley

LOS ANGELES, April 15.—Plans have been completed for holding the 1939 Montana National Bituminous Conference at Sun Valley, Idaho on September 11 to 13, according to D. L. Cheney, bituminous engineer of the Montana State Highway Commission.

The Idaho highway department will co-operate with Montana in making arrangements for the meeting in this ideal location. Committee will be appointed in another three or four weeks to work out details of the program designed to interest highway officials, engineers, oil company representatives.

Crude Stocks Drop

WASHINGTON, April 17. — Bureau of Mines reports stocks of crude petroleum totaled 275,774,000 barrels on April 8, having dropped 345,000 barrels during week previous to that date. Stocks of domestic crude fell 407,000 barrels during the week but a 62,000-barrel increase in foreign crude partially offset this drop. See figures in next column.

Crude Price Changes

MT. PLEASANT, MICH.—Effective April 18 Simrall Corp. advanced West Branch and Arenac, Mich., crude prices 4 cents, to new price of $0.74 per barrel. Opening of lake navigation was given as reason for advance.

Last previous change was a 4-cent reduction, Dec. 13, 1938.

Weekly Changes in U. S. Crude Oil Stocks*

(Thousands of Barrels)

Grade or Origin	Mar. 25	April 1	April 8	Change from April 1
Pennsylvania Grade	5,487	5,498	5,556	+ 58
Other Appalachian	1,403	1,449	1,358	— 91
Lima-Michigan	1,856	1,892	1,832	— 60
Illinois-SW Indiana	11,892	11,990	12,153	+163
Arkansas	3,257	3,266	3,167	— 99
Kansas	7,188	7,144	7,230	+ 86
Louisiana	13,997	14,037	13,960	— 77
Northern	5.623	5,706	5,752	+ 46
Gulf Coast	8,374	8,331	8,208	—123
New Mexico	6,579	6,561	6,587	+ 26
Oklahoma	69,648	69,834	69,348	—486
Texas	90,344	91,895	91,534	—361
East Texas	20,238	20,888	20,888	.....
West Texas	17,343	17,299	16,964	—335
Gulf Coast	20,554	21,257	21,391	+134
Other Texas	32,209	32,451	32,291	—160
Rocky Mountain	20,630	20,589	20,611	+ 22
California	38,601	39,065	39,477	+412
Foreign	3,033	2,899	2,961	+ 62
Total U. S. Refinable	273,915	276,119	275,774	—345
Heavy in California	16,134	15,916	15,687	—229

* As compiled by U. S. Bureau of Mines.

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Coming Meetings

Oil-World Exposition, Houston, Tex., April 24 to 29.

American Institute of Mining & Metallurgical Engineers, Open Hearth Conference, Cleveland, April 26, 27, 28.

Chamber of Commerce of the U. S., 27th annual meeting, Washington, D. C., May 1 to 5.

Petroleum Electric Supply Assn. and Petroleum Industry Electrical Assn., Rice Hotel, Houston, Tex., May 2-4.

Natural Gasoline Assn. of America, Hotel Tulsa, Tulsa, May 3-5.

Oil Belt Safety Conference, Abilene, Tex., May 4, 5.

American Gas Assn., Natural Gas Section, Tulsa, Okla., May 8 to 11.

American Institute of Chemical Engineers, Akron, O., May 9-11.

Virginia Oil Men's Assn., annual spring meeting, John Marshall Hotel, Richmond, May 11, 12.

National Battery Manufacturers Assn., Greenbrier Inn, White Sulphur Springs, W. Va., May 11, 12.

American Petroleum Institute, 9th mid-year meeting, Roosevelt Hotel, New Orleans, La., May 15 to 18.

National Oil Scouts Assn., Houston, Tex., May 18-20.

National Assn. of Purchasing Agents (Oil Company Buyers' Group), annual meeting, Fairmont Hotel, San Francisco, Calif., May 21 to 25.

World Automotive Engineering Congress, sponsored by S.A.E. for New York, Hotel Pennsylvania, May 22-28; Indianapolis, May 29, 30; Detroit, Hotel Statler, May 31-June 2; San Francisco, Hotel Fairmont, June 6-8.

Illinois-Indiana Petroleum Assn., annual meeting, Robinson, Ill., June 3.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., June 13.

Pennsylvania Grade Crude Oil Assn., annual meeting, Hotel Hershey, Hershey, Pa., June 15, 16.

13th International Congress of Carbide, Acetylene, Oxy-Acetylene Welding & Allied Industries, Munich, Germany, June 25 to July 1.

American Society for Testing Materials, 42nd annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26 to 30.

American Institute of Mining & Metallurgical Engineers, regional meeting, San Francisco, July 10 to 17.

The Eastern United States Michigan Oil & Gas Exposition, Mt. Pleasant, Mich., Aug. 1 to 6.

American Society of Mechanical Engineers, Hotel Pennsylvania, and Engineering Societies Bldg., 29 West 39th St., New York, Sept. 4 to 8.

Oil Workers International Union, Hammond, Ind., Sept. 5.

American Chemical Society, Detroit, Sept. 9 to 13.

National Petroleum Assn., Hotel Traymore, Atlantic City, N. J., Sept. 14, 15.

New Jersey Oil Trades Assn., fall outing, Sept. 28.

Independent Petroleum Assn. of America, 10th annual meeting, Ft. Worth, Tex., Oct. 18-20.

National Tax Conference, Palace Hotel, San Francisco, week of Oct. 16.

40th Annual National Automobile Show, Grand Central Palace, New York, week of Oct. 15.

National Safety Congress and Exposition, Chalfonte-Hadden Hall, Atlantic City, N. J., Oct. 16 to 20.

American Gas Assn., annual convention, New York, Oct. 9, 10.

National Motor Truck Show, Navy Pier, Chicago, Nov. 8-16.

The Petroleum Chemist and the Catalyst

By Arch L. Foster, Technical Editor

Before the Petroleum Division of the American Chemical Society on April 4-5, at Baltimore was presented without doubt the greatest assembly of chemical information that has ever been collected by a chemical organization, on the application of catalysis to petroleum refining. The assembled papers alone will fill a good-sized volume, most of which is devoted to one phase or another of catalysis as it applies to petroleum.

In these papers the authors, among which are probably a majority of the leaders in catalytic chemistry in this country as well as several from abroad, present recent developments applying catalysis to commercial or hoped-for commercial processes for manufacturing the improved petroleum products of tomorrow. Catalysts were first applied on a large scale in recent years to refining by the polymerization of refinery gases, by the Universal process using solid phosphoric acid. In earlier years, between 1912 and 1930 aluminum chloride was used to "crack" gas oils to gasoline.

Now these chemists parade before us in rapid succession alkylation, the combination of a saturated and an unsaturated hydrocarbon to form isoparaffins of the motor and aviation fuel boiling range; isomerization, or the catalytically induced rearrangement of the hydrocarbon molecule to form high anti-knock gasolines from those normal, straight-chain hydrocarbons low in anti-knock quality; aromatization, or the conversion of aliphatic, relatively saturated hydrocarbons to molecules of the benzene type, also very high in anti-knock, useful also as chemical intermediates for the manufacture of commercial products formerly obtained only from coal-tar distillates.

Methods have been devised to remove catalytically some hydrogen from paraffin molecules, by which alkylation may be easily affected commercially, a method called dehydrogenation; hydrogenation, or the process for adding hydrogen to unsaturated molecules where that is desired, has been perfected to produce some of our superfuels for aviation use. Hydration is the adding of a molecule of water to olefins, to form synthetic alcohols from still gases or from gases from which hydrogen has been subtracted by dehydrogenation. This process is now making alcohols like ethyl or grain alcohol which never heard of a corn or a rye field, isopropyl alcohol, glycerine innocent of any association with pigs, and others useful in commerce and industry.

Dr. "Jim" Brings His Gang

How a famous research authority and a "live" group of chemistry students can make a movement grow by leaps and bounds was illustrated by the size and enthusiasm of the delegation of budding chemists which came to the Baltimore meeting of the American Chemical Society from the University of Texas.

Some few years ago Dr. J. R. Bailey of the Department of Chemistry of that university decided that the way to help students to really understand chemistry and what it means to the nation was to get them into touch with the country's leading chemists and the work those men are doing—the students of yesterday. So he started a revolving fund, from money picked up here and there, by contributions from Old Grads and other sources. From this fund students may borrow without interest the money needed to join the Society as a Student Member. The fund is to be maintained in perpetuity exclusively for the students to come.

Now Dr. "Jim", as he is known far and wide, thought it a good idea if these ambitious students meet the thousands of chemists, famous and obscure, who come to the American Chemical Society's meetings hear them talk, discuss weighty research and industrial problems. So he proposed that all and sundry who were interested make the trek to Baltimore April 3-7, and see how chemists wrestle with their grown-up problems.

Student youngsters can do one thing plenty fast—that is, make up their minds. Between Friday evening, March 31, and noon, April 1, nearly forty students piled into cars—big, little, new, old, and just plain jaloppies. The carefree kids filled 'em full of Texas "gas" and water and started on the 1700-mile ramble. Some even came by airplane.

Taking turns driving the cars, they crossed half a continent, and the engines got a chance to cool only when the cars had discharged their tired but irrepressible passengers in the snappy air of Baltimore.

"We did pretty well in our car," the spokesman of one group said when telling the story to the 150 men and women at the Longhorn Breakfast, Wednesday morning, "until it started to rain. Then we had to get the baggage inside that we were carrying on the running-boards. With seven men in there already that made it a little crowded."

Contents

Steam, Air Used to De-Coke Still Tubes in New, Simple Method, by T. E. Garrard R-146

Steam and air decoking has been standard for over a year on ten deFlorez heaters of Holmes-Manley units charging a clean gas oil. Definite advantages found in box type furnaces also.

Effect of Fatty Acid Derivatives on Lubricants, by W. A. Ralston and E. J. Huffman R-150

Chemical combination of fatty acid derivatives with complex synthetic resins forms addition products which lower materially the pour points of paraffinic lubricating oils.

High Speed Diesel Fuel Problems Less Acute R-156

High speed diesel fuel difficulties are working themselves out as refiners, marketers and consumers become familiar with engine and fuel limitations. Straight run fuels are preferred. Diesel dopes are used only in isolated instances to improve cracked fuels.

Traces of Copper in Gasoline Determined by New Test, by G. H. Short and W. A. Schulze R-162

Traces of copper in gasoline may promote gum and color instability. A test has been developed by which small traces may be detected in gasolines, to aid in plant control.

Ipatieff Honored at A.C.S. Meeting Devoted to Study of Catalysis R-164

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Refining Technology

Fig. 2. A typical cracking unit with box-type heaters, in which the steam-air method of tube cleaning is used

741.6

Steam, Air Used To De-Coke Still Tubes in New, Simple Method

By T. E. Garrard*

A STEAM-AIR decoking method which makes possible still tube cleaning without the laborious procedure of present methods, without removal of fittings, and which effects removal of the greater part of the coke as solid particles, has been developed by The Texas Co. With this method the coke is loosened by a combination of furnace heating, steam flow through the tubes at relatively low velocity, intermittent limited injection of air, and finally pure air is used for burning out the last traces of coke. The coke deposits may vary from a thin scale to an inch thick and from loose soot-like deposit to strongly adhering, flinty deposits. The costs and time required will vary from 35 per cent to 100 per cent of costs by the mechanical method.

The most widely used method employs various types of cutters driven by high speed air turbines. This method necessitates joining the tubes outside the furnace with connecting devices equipped with closures, a sufficient number of which must be removed each time down to permit inspection and removal of coke.

Steam and air decoking has been standard for over a year on ten de Florez heaters of Holmes-Manley units charging a clean gas oil. No troubles whatsoever have been experienced. The process was found to be reliable in producing absolutely clean tubes, making it necessary to open the tubes only for semi-annual calipering. Other heaters (box type furnaces) are being decoked by the steam-air method at routine down periods and, while a long time record of successful processing is not yet available, definite advantages are realized.

The tubes are steamed free of oil in the usual way after shutting down. The furnace is then fired again to 1100-1300 degrees Fahr., the more severe cracking conditions requiring the higher temperatures while around 1100 degrees Fahr. is adequate for crude stilling heaters. Steam flow at around 100 pounds per square inch inlet pressure is used, amounting to a maximum of about 3000 pounds of steam per hour. Starting with a hot furnace a flow of coke in the steam is obtained in about one hour. The rate of steam flow must be regulated carefully to suit the nature and quantity of coke coming out or else serious erosion of the heaters will result. It will be found at times that less than 10 pounds inlet steam pressure acting through 5000 feet of tubing will bring a copious flow of coke particles ranging in size from dust to pea size. These are illustrated in the accompanying photographs.

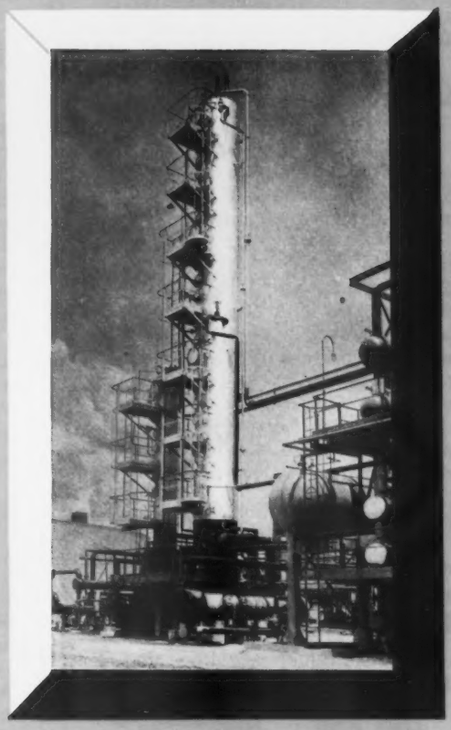
Steam is put through the heater in the direction of normal oil flow until the coke yield is materially lessened, and then reverse flow is used. Small amounts of compressed air added to the inlet steam promote loosening of the coke and this is resorted to as necessary to maintain coke removal at the desired rate. Usually after four to six hours air is used more heavily to burn the patches of coke which do not loosen and blow out. The operator controls the amount of air by watching the reddening of the tubes in order to avoid overheating them.

The operator sees various tubes and patches fire

*The Texas Co.

Editor's Note—Patent applications have been filed covering the process for decoking still tubes described in this article. Information regarding licensing and use of the process may be obtained from The Texas Co., Chrysler Bldg., New York City.

Peak Efficiency



A key requirement of the modern cracking process is the ability to vary its operations while maintaining plant performance at its peak efficiency and economy.

Cracking processes licensed through this organization can give the refiner that plant flexibility which enables him to quickly, economically and profitably vary his finished products and feed stocks to meet the market conditions of the moment.

GASOLINE PRODUCTS COMPANY, INC.

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Licensing Agents. THE M W KELLOGG CO., Jersey City, New Jersey, or its *European Representative:* COMPAGNIE TECHNIQUE des PETROLES, 134 Boulevard Haussmann, Paris, France

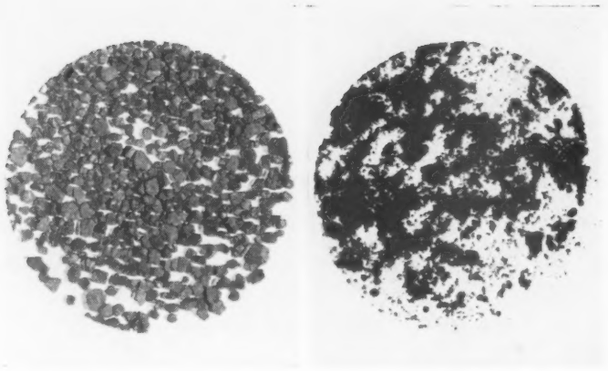

Fig. 1. Two photomacrographs showing the approximate range of particle size of coke as removed by the steam-air process described in the accompanying article. The larger particles are about 1/4-inch maximum diameter; 95 per cent of the fine material passes a 200-mesh sieve

up and cool down successively along the tube flow from the inlet to the outlet, and at length it is apparent that the coke has been burnt from all tubes. Increasingly richer air mixtures are used and at the time all steam is off and pure air is flowing, only a trace of CO_2 should show in tests with flue gas analysis apparatus at the vent.

Some tube coke, in contrast to still coke, will show as high as 25 per cent ash content (iron oxide, largely, from sulfide corrosion products). This must be flushed out until patches of coke possibly glazed over with ash are cleaned and burnt away with more air. When the furnace has cooled to about 400 degrees Fahr., the tubes are flushed thoroughly with water.

The arrangement of equipment is typically as follows:

1. Vent lines of 3-inch pipe are provided at the heater inlet and outlet, each having a separate valve. Steel fittings must be used.

2. A steam-air manifold for 125-pound service of 1½-inch pipe connects to both inlet and outlet, with provisions for reversal of the flow through the heater.

3. Thermocouples are disposed in the furnace to permit determining the maximum temperatures to which the tubes will be subjected.

4. Means of proper visual examination while decoking are provided for all tubes where coke deposits are thick. Frequently this means that blue flame gas burners must be arranged.

5. Depending on the size of the furnace and tube arrangement, one or more supplementary 1-inch air connections are made, say at one-third and two-thirds of the way through the heater.

Advantages and Disadvantages

Among the results of the use of this method has been that leakage of the header joints has decreased, split tubes have decreased, and the tube rolls have not loosened. Scaling of the exterior of the tubes does not appear accelerated, and scaling of the interior is negligible. Erosion of the headers occurred at first, but stopped when the operators learned to control the steam flow, basing their control on proper sampling of the coke at the vents.

The steam-air method has been of considerable value in decoking convection sections equipped with welded return bends. Experience has shown that the mutual adaptation between decoking and the furnace construction and its charge and operation deserves careful consideration in every case. The extent of this adaptation determines, of course, the results obtained by decoking. Considerable experience on a wide range of cracking operations has shown that conditions favorable to application of steam-air decoking are:

1. Low temperature level operation in respect to both oil and tube metals.

2. A minimum of refractory, recyclic, components in the charge.

3. A relatively non-corrosive charge stock.

4. Use of corrosion resistant alloy tubes.

5. Radiant heaters, so that no tubes are overheated by the decoking flames.

6. Coke deposition in tubes which are easily visible.

7. The greater the number of tubes to be unheaded and cleaned individually, the greater are the comparative advantages of steam-air decoking.

Conditions which make steam-air decoking less advantageous are:

1. Some coke is deposited of such thickness and nature as to cause plugging of the tubes when it breaks loose in chunks. For example, 1¼-inch coke in a 3 to 3½-inch inside diameter tube leaves only ½ to 1-inch flow channel, which is readily seen to be insufficient if full thickness pieces are carried down by the steam.

2. When carbon steel tubes are used a maximum of care is necessary to avoid overheating.

3. Coke deposition in soaker sections so located that proper external heating can not be applied, makes decoking slow.

4. Due to unfavorable charge stock and, probably, flame impingement, sometimes coke is found which is of a dead-burnt, graphitic character, scarcely oxidizeable with oxygen; this, of course, is undesirable.

5. The presence inside the furnace of a mass of brickwork, which must cool before men can enter to inspect or work on the furnace or tubes, is undesirable.

6. In general, the less the extent of favorable factors obtained, the fewer the advantages realized by decoking in respect to savings of direct labor costs and battery time.

Heaters easy to knock are decoked easily. Depending on the combination and extent of the favorable and unfavorable factors, the costs and time required for decoking will vary from 35 per cent to 100 per cent of the mechanical costs.

The following tabulation of advantages and disadvantages of the steam-air method of decoking is also to be considered in conjunction with the distribution of factors which make decoking hard or easy.

Advantages

1. A crew of 2 men handle the decoking of all tubes, saving in labor or down time, and resulting in less fluctuation of labor forces.

2. Cleaner tubes are generally realized. This is very important at periodic test and inspection, when decoking can uncover serious spotty corrosion, deep pitting, which would otherwise be hidden by coke deposits. Steam-air decoking is required by The Texas Co. prior to periodic test and inspection.

3. There is no loss of metal by hard knocking. Tubes have been known to be cut and ruined by careless labor holding a knocker in one place.

4. Steam-air decoking removes a serious noise hazard and the nuisance of dust around operating equipment, pump rods, bearings, etc.

5. When decoking utilizes metal temperatures above 1250 degrees Fahr. a thorough stress relieving and removal of embrittlement of chrome tubes is effected.

6. The heater may be welded into a solid continuous coil and still be cleaned, thus avoiding the high cost of special rolled joint header fittings and the leaks and maintenance costs of these fittings. As a special case, almost solidly coked welded sections have been decoked overnight.

A list of disadvantages is also given:

Disadvantages

1. Decoking burns out the coke seal between old tubes and the header boxes, so that more leaks may be experienced here. Some units have given trouble, others with good initial rolls have not.

2. Whether the high temperatures reached result in accelerated spreading, distortion of the headers is still debatable. This effect would be very undesirable, but it evidently is not large.

3. Possibilities of damage exist which require careful watching: Erosion, due to excessive steam velocities; and burning of the tubes if the furnace fires and the use of air inside the tubes are not properly supervised. This necessitates the use of trained and reliable decoking operators.

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GASOLINE ANTIOXIDANTS

Effect of Fatty Acid Derivatives on Lubricants

III. Use of High Molecular Weight Acylated Coumarone and Indene Type Resins In Lubricating Oils.

By A. W. Ralston and E. J. Hoffman*

ABSTRACT

Acylated coumarone and indene resins, synthesized by condensing fatty acid chlorides with resin fractions, lower materially the pour points of paraffinic lubricating oils to which they are added.

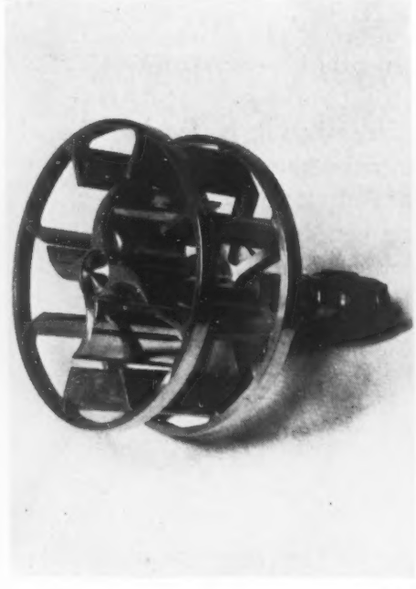
Paraffin crystallization from solution is modified by the presence of these products. Also, oils to which these products are added show lower temperature increases in operation than do untreated oils, indicating higher lubricating value and reduced internal friction.

Paraffin in oils shows a gradual trend from clearly defined crystals to a product of the amorphous type with increasing amounts of additive in the oil. Illustrations shown here trace the crystallization tendencies clearly.

*Contribution from the Laboratories of Armour & Co., Chicago. Part II, Feb. 8, 1939, p. R-50, dealt with the use of ketones in spindle oils to reduce running friction and increase film strength.

THE high pour points of lubricants containing appreciable amounts of paraffin have been attributed to the formation of a system of interlocked paraffin crystals, which prevents the free flow of the oil.[1] The addition of small amounts of either natural or synthetic substances which modify this crystal formation has been shown to materially lower the pour points of the oils. A large number of substances have been recommended for this purpose. In order to summarize briefly this field the following list of some of the products which have been shown to lower the pour point of paraffin-containing oils has been prepared: Zinc salt of degras[2], condensation products of monochloro paraffin and naphthalene[3], xylyl stearamide[4], coal tar pitch[5], aluminum stearate[6], esterified hydroxy stearic acid[7], hydrocarbons polymerized in the

[1] Zimmer, J. C., Davis, G. H. B., and Frolich, P. K. Pennsylvania State College, Mining Ind. Experimental Station Bulletin 12, 57 (1933).
[2] Jarman, R. N., U. S. 1,767,076.
[3] Davis, G. H. B., U. S. 1,815,022.
[4] Sullivan, F. W., Jr., and McGill, W. J., Can. 316,807.
[5] Black, J. C., Rial, W. D., and McConnell, J. R., U. S. 1,859,692.
[6] Bennett, H. T., and Story, L. G., U. S. 1,896,342.



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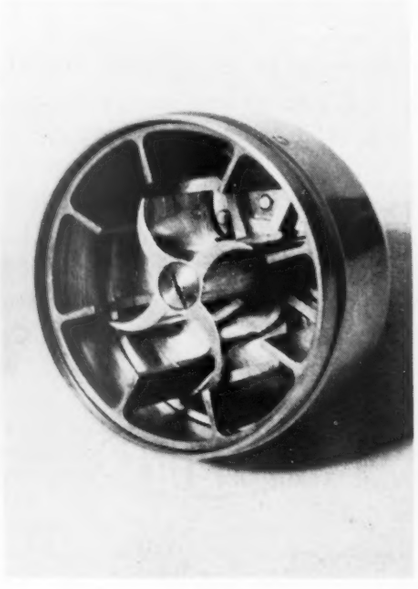

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3

Figs. 1, 2, 3. These photographs illustrate the essential components of the Stephens Consistometer used for determination of fluidity of lubricating oils to which synthetic fatty acid derivatives have been added: (1). Propeller and framework; (2). Propeller and framework in oil cup; (3). Complete apparatus assembled

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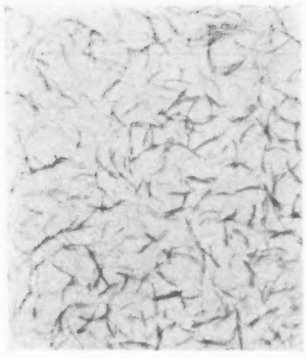

Fig. 4. Paraffin crystals in untreated lubricant, solid at room temperature

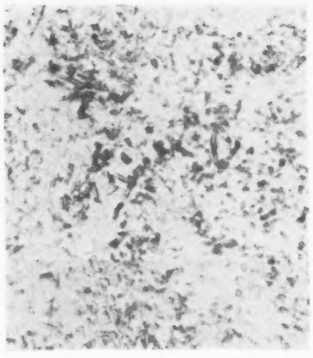

Fig. 5. Crystals in lubricant, treated with depressant, solid at room temperature

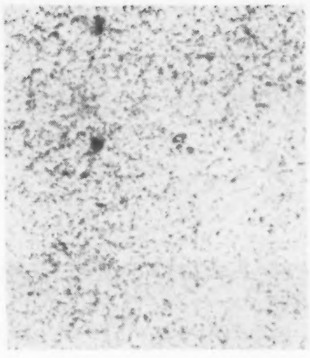

Fig. 6. Lubricant treated with larger amount of depressant, semi-solid at room temperature

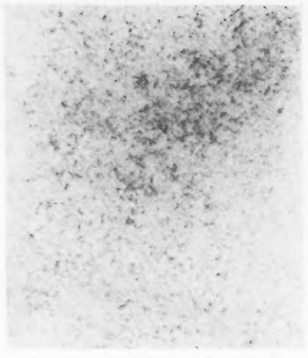

Fig. 7. Lubricant treated to remain liquid at room temperature

presence of aluminum chloride[8], oxidation products of waxy hydrocarbons[9], recracked cracking still residues[10], wool fat[11], condensation products of sugars and fatty acids[12], ethylene glycol distearate, etc.[13], reaction products of oleic acid and dichloro paraffins in the presence of aluminum chloride[14], esters of organic carboxylic acids and substituted hydroaromatic compounds[15], phthalic esters of alkyl substituted phenols[16], products of the condensation of aromatic hydrocarbons and chloro paraffins further condensed with trioxymethylene[17], resorcinol distearate, etc.[18], aluminum salts of synthetic fatty acids[19], condensation products of phenol and chloro paraffins[20], phenol-aldehyde resins condensed with chloro paraffins[21], and oils polymerized by silent electric discharge[22].

It will be noted that in practically all of the cases the substances which have been observed to lower the pour point of lubricants are complex mixtures from which it would be very difficult to separate pure chemical compounds. It appears, therefore, that the effect of the addend upon the paraffin crystals is due more to the physical state of the addend than to its actual chemical identity. In this connection it is interesting to note that plastics condensed with long chain compounds have been recommended recently for this purpose. Substances such as the condensation products of phenol-aldehyde resins with chloro paraffins are examples of oil soluble plastic materials which possess the property of modifying paraffin crystallization. It is possible that such substances form a complex crystal system with the paraffin. The crystallization characteristics of this system may be very different from those of the paraffin itself. The same phenomenon is observed frequently in the crystallization of organic compounds from solvents. Often small amounts of complex impurities cause compounds to "oil out" of solution or else they modify their behavior in such a manner that well formed crystals are not obtained until the impurity is removed.

The present investigation is concerned with the effect of high molecular weight acylated coumarone and indene type resins upon lubricants. They were found to be very effective for lowering the pour points of paraffin-containing lubricants.

Preparation

The products used were prepared by the reaction of high molecular weight fatty acid chlorides with either a coumarone or indene fraction or with a low melting coumarone resin. In the case of the coumarone fraction used, the resin content, based upon the yield of soft resin which could be obtained, was 39%. The resin content of the indene fraction was 74%. The coumarone resin used had a melting point of 94° C. (201.2° F.) (ball and ring). These starting materials were then condensed with the fatty acid chlorides in the presence of aluminum chloride. Tetrachloroethane was used as a solvent. The resulting aluminum complex was then hydrolyzed with water. The quantity of fatty acid chloride used was in most cases an equimolecular amount based upon the coumarone or indene content of the fractions. When smaller amounts of the fatty acid chloride were used they were calculated on a percentage basis assuming an equimolecular amount to be 100%. When the coumarone or indene fraction is employed the reaction is one of simultaneous acylation and polymerization, and the resulting product is an acylated polymer of coumarone or indene. If the coumarone resin is used, it is probably acylated without further polymerization. The products are either very viscous liquids or soft solids.

[8] Pevere, E. F., and Ludeman, C. G., U. S. 2,031,227.
[9] Sloane, R. G., U. S. 2,045,806.
[9] Davis, G. H. B., U. S. 2,055,482.
[10] Levin, Harry, U. S. 2,024,106.
[11] Limburg, H., U. S. 2,023,369.
[12] Peski, A. J. van, U. S. 2,022,990.
[13] Pevere, E. F., Can. 356,637.
[14] Moran, R. C., U. S. 2,043,836.
[15] Reiff, O. M., and Badertscher, D. E., U. S. 2,048,465.
[16] Reiff, O. M., and Badertscher, D. E., U. S. 2,048,466.
[17] Reiff, O. M., U. S. 2,052,003.
[18] Peski, A. J. van, U. S. 2,053,853.
[19] Barth, E. J., and Corlew, R. P., U. S. 2,059,192.
[20] Reiff, O. M., U. S. 2,062,676.
[21] Reiff, O. M., U. S. 2,061,008.
[22] Liberthson, L., U. S. 2,073,641.

Effect on Pour Points

A large number of these acylated resins have been prepared, and their effect upon the pour points of lubricating oils has been determined. In the compounds investigated the percentage of fatty acid chlorides to resin forming bodies has been varied over rather wide limits. In a number of cases, particularly with those products prepared from low molecular proportions of fatty acid chloride, the products were found to have no effect upon the pour points. Those prepared by the action of unsaturated fatty acid chlorides, such as oleoyl chloride or linolenoyl chloride, did not appreciably reduce the pour points. Several of the products, however, materially reduced the pour point of paraffin containing lubricants. In Table 1 is shown the effect upon lubricants of the addition of 0.5% of several of these products prepared from stearoyl chloride and the starting materials previously described.

Table 1

Effect of Acylated Coumarone and Indene Type Resins Upon the Pour Points of Lubricants

Starting Materials	% Equimolecular Proportion of Acid Chloride Used	Pour Point ° F. Lubricant A	Lubricant B	Lubricant C
.....	...	35	20	10
Coumarone Resin Stearoyl Chloride	100	—10	— 5	—10
Coumarone Fraction Stearoyl Chloride	100	— 5	15	0
Indene Fraction Stearoyl Chloride	100	—20	— 5	0
Indene Fraction Stearoyl Chloride	67	—10	— 5	— 5

Effect Upon Fluidity

The effect of the addition of small percentages of these acylated resins upon the fluidity of lubricants at low temperatures has been determined. The operation of

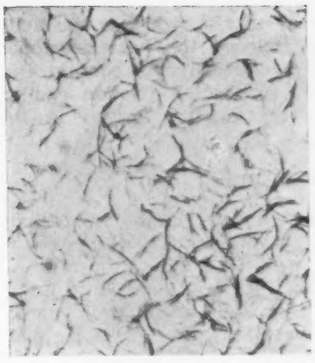

Fig. 8. Paraffin crystals in untreated lubricant at low temperature

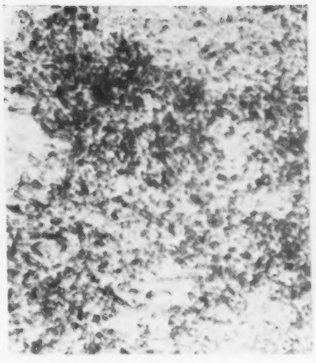

Fig. 9. Lubricant shown in Fig. 5, cooled to lower temperature

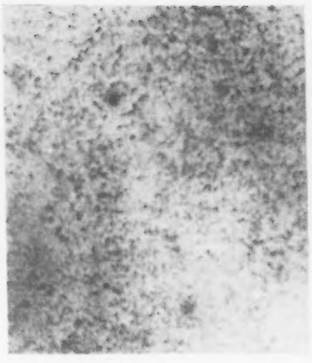

Fig. 10. Lubricant in Fig. 6, when reduced to lower temperature

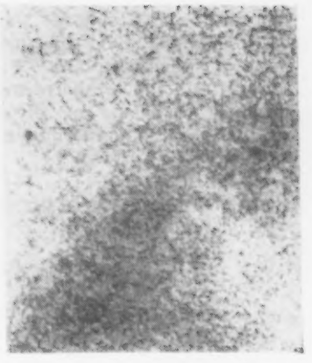

Fig. 11. Same lubricant shown in Fig. 7, when cooled to lower temperature

oils at low temperatures is not dependent entirely upon their pour points. Some oils show good shear and fluidity characteristics at temperatures much below their pour points while others do not.

A Stephens' Consistometer was used for the determination of the fluidity. This apparatus consists of a four-curved-bladed-propeller equipped with a driving shaft held rigidly in place in a cylindrical framework to which are attached baffle plates. This is shown in Fig. 1. This part of the apparatus is fitted into the metal oil container as shown in Fig. 2. This assembly is then placed in a larger metal bowl which is used as a cooling chamber. After the apparatus has been assembled, the test oil is placed in the oil bowl. The bowl is covered and packed with solid carbon dioxide. The propeller is rotated at a constant speed and the resistance to turning is recorded upon a revolving drum. As the temperature of the oil becomes lower the resistance to turning increases. This resistance reaches a maximum value and then drops. This indicates that the propeller has formed a channel in the oil. Readings are taken at definite temperature intervals. It is of course desirable for an oil to show low resistance to the rotation of the propeller and also that channeling not occur until a low temperature is reached. The entire apparatus is shown assembled in Fig. 3.

A run was first made with an untreated oil and then with another sample of the oil containing a definite percentage of an acylated resin. A large number of lubricants containing various percentages of acylated resins have been investigated. Table 2 shows the results obtained using lubricant B compared with a sample of the same lubricant to which has been added 0.5% of a stearoylated indene polymer prepared from equimolecular proportions of indene and stearoyl chloride.

Table 2
Effect of Stearoylated Indene Resin Upon Fluidity

Temperature °F.	Torque — Untreated Oil	Torque — Treated Oil	Remarks
100	5	5	
40	5	5	
20	50	40	
10	100	60	Pour point of untreated oil
0	230	140	
— 5	340	220	
—10	380	300	End of true fluidity of untreated oil
—15	...	510	Pour point of treated oil
—20	...	700	
—25	...	1090	
—30	...	1300	End of true fluidity of treated oil

In general, the effect of the acylated resins upon the fluidity as determined by this method is not so marked as the effect upon the pour point. This has been found to be true in the case of a number of other addends which were investigated.

Crystallization of Paraffin

In this study, an attempt was made to observe the effect of the acylated resins upon the crystallization of paraffin from lubricating oil. The lubricants used had a pour point above room temperature. Three samples containing varying amounts of stearoylated indene resin were prepared from this lubricant. These were made by adding the resin, melting the mixture, and allowing a small amount to crystallize slowly upon a glass slide. The amount added was such that one sample was still solid at room temperature, another was a semi-solid, and the third was liquid. Photomicrographs were made of the samples at room temperature and of the same samples after they had been held for 18 hours at a low temperature. These pictures are shown in Figs. 4 to 11 inclusive.

Fig. 4 shows the paraffin crystals obtained from the untreated lubricant. Figs. 5, 6, and 7 illustrate the effect of the addition of increasingly greater amounts of resin. All of the samples were then subjected to a low temperature for 18 hours. Fig. 8 shows the untreated lubricant after cooling and Figs. 9, 10, and 11, the samples containing the added resins under the same conditions. All of the mixtures were solid at the lower temperature. It will be noted that the paraffin in the untreated lubricant formed a network of needle-like crystals which did not change appreciably in size or shape at the lower temperature. Fig. 5 shows the same lubricant, still in the solid state, containing an amount of stearoylated indene resin insufficient to lower the pour point below room temperature. The effect of the addend upon the crystals is very marked. Most of the paraffin has come out of solution as imperfectly formed crystals or as amorphous masses. A few crystals which have some resemblance to the original paraffin crystals are still apparent. When this sample is kept at a low temperature, Fig. 9, the number of imperfectly formed crystals is increased. Fig. 6 shows the lubricant which is semi-solid at room temperature. The paraffin which has come out of solution has formed a heterogeneous mass with no definite crystalline form. When this sample is held at a temperature below its pour point, Fig. 10, it becomes essentially an amorphous mass. The sample which is fluid at room temperature, Fig. 7, shows that a few imperfect crystals have been deposited. When this sample solidifies, Fig. 11, it forms an amorphous mass which contains a few imperfectly formed paraffin crystals.

From a study of the above, it appears that the effect of the stearoylated indene resin upon the paraffin crystals in this particular sample has been to inhibit normal crystallization. The separation of amorphous particles indicates that the resin has, to a great extent, formed a system with the paraffin. Its only relationship to the paraffin is that the latter is one of the components of the system. The magnitude of this change is in proportion to the amount of resin added.

Lubricating Properties

A sample of an untreated lubricating oil and a similar sample to which had been added 0.5% of a stearoylated indene were tested in the apparatus described by Ralston,

Hoffman, and Stephens[23]. This apparatus consists of three ball bearings[24] held in place by an upper plate rotating upon a polished plate. A thermocouple is immersed in the oil, and the temperature increase above room temperature is recorded for every five minute interval. The results obtained are shown in Table 3.

Table 3
Temperature Increases with Lubricating Oil and Lubricating Oil Containing 0.5% Stearoylated Indene

Time (Minutes)	Temperature Increase ° F. Untreated Oil	Treated Oil
5	12.6	9.7
10	19.5	17.1
15	26.2	24.2
20	33.2	28.2
25	38.4	32.9
30	43.1	37.1
35	48.6	43.2
40	53.0	47.3
45	59.4	50.8
50	64.8	54.5
55	69.8	58.4
60	75.0	61.9
65	79.2	65.6
70	83.8	68.2
75	87.0	70.2
80	90.4	73.6
85	96.4	75.7
90	100.0	77.6

An examination of these results shows that the addition of this resin materially reduced the heat developed under these conditions. The acylated resins contain carbonyl groups. The property of reducing friction can be ascribed to the presence of these polar groups in the molecules.

Conclusions

Acylated coumarone and indene resins materially lower the pour points of paraffin-containing lubricants to which they are added.

The normal crystallization of paraffin from solution in lubricating oils is modified by their presence. Evidence has been presented to show that their effect upon the pour points of lubricating oils is due to the formation of a system in which the paraffin is a component.

When the acylated resins are added to lubricating oils these treated oils show lower temperature increases during operation than the untreated oils when tested under similar conditions.

---

[23] Ralston, A. W., Hoffman, E. J., and Stephens, E. S. NATIONAL PETROLEUM NEWS, November 3, 1937.

[24] Since the publication of the above article [23] the apparatus has been modified by the replacement of the half-round ball bearings by ball bearings.

Cathodic Pipeline Corrosion Protection

Cathodic protection for pipelines to prevent corrosion from soil action has been developed and patented by Dr. Scott Ewing, Research Associate under the American Gas Association grant at the U. S. Bureau of Standards. The process is dedicated to free use by all American Industry by the association which sponsors the research.

Dr. Ewing has perfected several new types of electrodes which permit more accurate measurement of stray ground currents. The method is to measure these currents existing at any given point along a pipeline, and then to set up opposing currents which "kill" the electrolytic action of the stray currents and avoid metal corrosion in the pipe. This system has been studied and used in various localities for some years and will doubtless now be applied more widely.

Extreme water-resistant characteristics have been built into the new chassis lubricant recently put on the market by Colonial Esso Marketers, designed to stand up under the average trip to and from the New York World's Fair this summer, announcement says.

It will stand the gaff of from 1500 to 2000 miles of driving; it is said to be extremely tacky and tenacious, will not drip or run under the highest temperatures expected to be met with during the Fair, and will be marketed under the name "Essoleum Chassis Lubricant H."

An appropriation of $25,000,000 for the construction and establishment of an "Aircraft Engineering Center" for the study of all phases of aircraft construction is proposed in the bill recently introduced into Congress by Rep. Knute Hill of Washington. It would be operated under the War Department, the bill provides.

The Center would be used for the development, experimentation, and testing of aircraft, with facilities for inspection, maintenance and repair. A research department under the U. S. Bureau of Mines would investigate the chemistry, electro-chemistry and electrometallurgy of materials to improve quality and reduce costs of light metals and other materials needed in aircraft production.

The measure also provides $2,500,000 for a military aeronautical school; a basic research division at the U. S. Bureau of Standards, and a Joint Industrial Board to advise the Congress on plans.

Liberalize Idea Plan

The "Coin-Your-Ideas" plan was recently liberalized by Humble Oil & Refining Co. Under the new arrangement, the amount of certain awards has been increased to further encourage employes to submit their ideas and stimulate more careful thinking and close observance of the operations and equipment. As an added incentive for interested employes a patent policy was also adopted regarding inventions by employes.

Under the new and modified plan the initial award may not be the final award. Suggestions which have been in use a full year will be revalued and will be eligible for a supplementary award not to exceed $250, less the amount of the initial award.

Annual capital awards not to exceed five in number, and each not to exceed $500, will be made for the most meritorious suggestions of the second preceding year which have been in use at least one year prior to Jan. 1 of the year they are considered for a capital award. The changes were the result of past success of the plan.

Some of the winning ideas in the refining department as offered by 12 employes follow:

Nipples are being put in the open end of bleeder valves where the threads would otherwise be exposed. Threads are thus saved from damage or corrosion and kept useful for other connection work.

Oil previously drained from exchangers and condensers to the sewer is pumped by suction of a cycle pump from a header to which exchangers and condensers have pipe connections, to cycle tank storage.

An old float and dial gauge on a cracking coil accumulator was replaced with four high pressure gauge glass columns.

A remote valve control was installed at the panel board so that adjustments could be made to the automatic liquid level controls at the storage tanks.

Flow arrangement through exchangers was changed from parallel to series, retaining the same steam connections, using 15 pounds on the first exchanger and 150 pounds steam on the second of the series. These series connections balance the load between the two exchangers and, due to a constant even flow, the full efficiency of the unit is obtained, more heat is transferred at a gradual increase, and the liquid velocity through the exchangers has been greatly increased. These changes have added greatly to the efficiency of the equipment and to the length of operating period between cleaning times.

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High Speed Diesel Fuel Problems Less Acute

By M. G. Van Voorhis, N. P. N.Staff Writer

ABSTRACT

Great progress in solving diesel fuel problems, most acute in the high speed diesel engine, has been made. While the consumer does not immediately benefit from these advances, some problems, such as fuel cleanliness, have been handed on to the marketing departments so that solution becomes a matter of education. Consumer acceptance of better fuels would lessen complaints.

Satisfactory or economic use of cracked fuels is in the future but there is said to be still more than enough straight-run fuel for present demand even when, to simplify distribution, it is sold for both No. 2 heating oil and diesel fuel. Narrower fuel classification and spread of viscosity has somewhat simplified refiners' problems but diesel engine manufacturers are warned that if prices are kept low, extra processing must be minimized.

SOLUTION of some of the diesel fuel problems of the higher speed engines which have vexed oil industry technologists, diesel engine manufacturers, and engine operators has made great progress in the past year. This is the opinion of several fuel experts who have kept in close touch with the diesel fuel situation. Diesel fuel specifications of manufacturers and the oil industry's classification of diesel fuels are in fairly satisfactory agreement. The large diesel fuel consumer is not finding it as necessary to ask for "trick" specifications, two or three large eastern companies report.

One of the major problems yet to be solved, and nearly all major oil companies are now working on it, is to make cracked distillate more suitable for diesel fuel. Low cetane number of diesel fuel from these distillates has caused it to be eliminated entirely from the products supplied by some companies in the east while others allow certain percentages of cracked products to be blended with straight-run fuel. One company permits a maximum of 50%. The apparent solution is to find some "dope" which will improve the ignition quality without being detrimental to other properties. The ability to use cracked products will open a market for a product available in larger quantities and provide greater possibilities to diesel engine utilization. Cracked distillates as a rule have one particular advantage over straight-run products in their lower pour point which is important to winter operation.

Diesel engines for trucks are compact and appear to require no more space than a gasoline engine of equivalent power

That cracked distillates are now effective in certain types of diesel engines, is a contrary experience described in UOP Booklet 225 of Universal Oil Products Co. on "The Cracking Art in 1937." This booklet points out that "engine tests on a Fairbanks-Morse 2-stroke cycle, 12 by 15-inch vertical single-cylinder solid-injection type engine indicated that cracked gas oils have as satisfactory performance as virgin gas oil stocks. This confirms the general opinion that cracked gas oil can be used very effectively and more economically than straight-run gas oil in certain types of diesel engines. The classification of diesel fuels according to low-, medium-, and high-speed engines was shown to be incorrect, since much depends on the engine design and tests of the fuel."

Of interest in connection with the use of cracked distillate is the development of the Houdry catalytic cracking process. This process is expected to have little effect upon the quality of cracked distillate as far as its use as diesel fuel is concerned. It was pointed out by a representative of one of the companies using this process that any cracking process tends to lower cetane number and that this is as true of the catalytic process as of thermal cracking.

The narrowing of the A. S. T. M. diesel fuel oil classification the past summer to include only the three lightest grades instead of five grades and the inclusion of only two ignition quality tests instead of four, with a definite preference for the cetane number test, show progress in ironing out specification problems. A slightly increased spread in viscosity is made by dropping the minimum viscosity on No. 1-D and No. 3-D fuels from 35 to 33 Saybolt Universal seconds at 100° F. Satisfactory results with the lower value had already been experienced, it was found. The change will make it easier to employ furnace and heating oil for diesel fuel as some companies have been doing. Cetane numbers of the three grades were unchanged but the corresponding diesel index numbers for grades 3-D and 4-D were raised from 30 to 32 and from 20 to 25 respectively. Oils more viscous than No. 4-D now require special negotiations between purchaser and seller.

The lowering of the minimum viscosity suggests the possibility of ultimately eliminating viscosity as a specified property of diesel fuel and possible gravity as well. One engine manufacturer is reported now to have omitted these properties from specifications. A new fuel injector design and improved filter system are said to be responsible for this omission. The lubricating effect of the fuel is thought by a few technologists to be less affected by viscosity than

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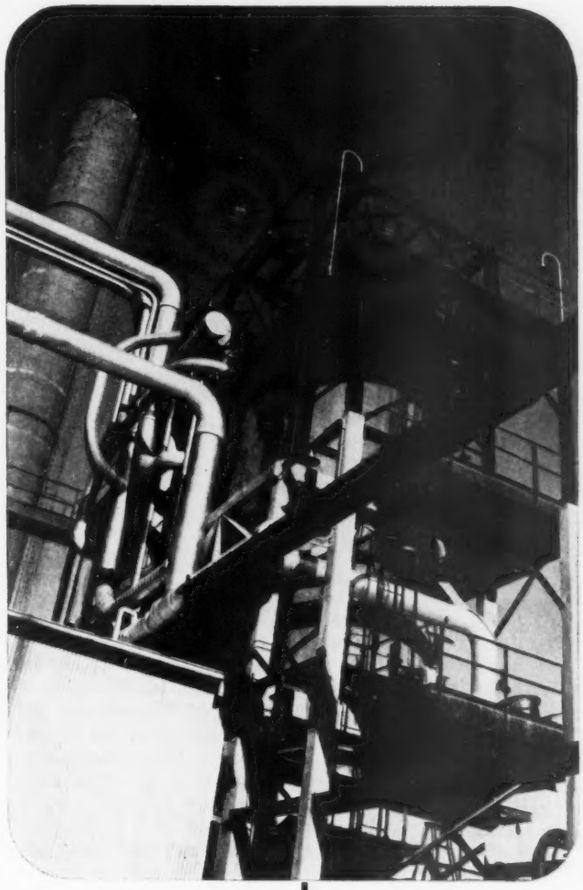

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by other properties of the fuel, including the presence of foreign particles. Improvement in materials for nozzle construction lessens the effect of abrasive action.

Viscosity still remains among the first three most important qualities to engine manufacturers, however, according to Universal Oil Products Co. surveys, now revised to Oct. 1, 1938.

G. L. Stetson, Shell Petroleum Corp., said recently that if we are to have any real control of injection timing, of the quantity of fuel injected, and of the shape of spray formation, the viscosity of the fuel must be controlled within reasonable limits. Broadly speaking, he said, fuels of low viscosity give fine atomization with broad dispersion of the spray but shortened penetration. Higher viscosity fuels offer greater resistance to atomization causing the larger fuel particles to have greater penetration with corresponding loss of dispersion.

The production of high-speed diesel fuel now requires more processing than gasoline, according to an engineer of one of the large oil companies, and the only factor that keeps it from costing more is the fact that small demand puts it in the by-product class. This situation cannot last long, it was his opinion. Either diesel engines must be designed to burn the cheap fuels not requiring extra processing or eventually consumers must pay higher prices for fuel. The same applies to domestic oil burners now demanding larger volumes of light fuel oils. This appears to be an outstanding economic problem although there is a general feeling that this will work itself out. Just how it works out should be of more concern to engine manufacturers than to the oil industry, inasmuch as it involves fuel costs of a product yet of small significance to refiners.

The controversy or misunderstanding of what is meant by availability of straight-run distillates for diesel fuel still exists and is at the root of the problem of economic supplies of diesel fuels. Straight-run distillate is excellent cracking stock and, from the standpoint of value of the cracked product, gasoline, as compared with straight-run diesel fuel plus the cost of cracking to gasoline, would normally bring the refiner more return.

As demand for more gasoline continues to increase cracking, surpluses of straight-run stocks will decline but if the demand for diesel fuel up to 30% of the total gasoline demand is required to produce any economic effect, as some authorities believe, it will be a long time before this condition arrives. Light diesel fuel consumption in 1937 was probably around 18,000,000 barrels as against over 500,000,600 barrels of motor fuel, Bureau of Mines figures show.

The potential future value of the diesel fuel market and of the furnace and heating oil market are admitted by one authority to have some bearing upon the present diversion of straight-run distillates to these uses. Temporary solution of diesel fuel marketing problems of some companies is reached by buying fuel oils on the open market which have satisfactory diesel fuel properties but cannot command better than furnace oil prices, it is reported.

More than one major oil company is using straight-run distillate exclusively for No. 2 heating oil in the eastern territory to make it meet cetane number requirements as diesel fuel. By doing so, technologists of these companies say, they have solved the distribution problem temporarily, or until demand warrants installation of additional storage space for handling diesel fuel. High cetane number and other properties of this grade of heating oil make it ideally suited to domestic oil burners designed for lighter fuel oils and probably saves many a trip to service burners which might otherwise have been put out of service by carboning up, it is claimed.

Competitive conditions in the New York area have brought the average cetane number of diesel fuel to around 50. One company using some cracked distillate blended into No. 2 fuel oil averages above 50 cetane number, laboratory tests show. Tests on competitive fuels in this same laboratory shows "surprising improvement" in cetane number in the past year and a half. But the uniformity of diesel fuels is not confined to the east. W. G. Ainslee, Sinclair Refining Co., told the Society of Automotive Engineers at a recent section meeting in Chicago that all refiners are now supplying a rather uniform product.

Ainslee pointed out that although some of the diesel problems are moving into the background, many questions still arise in the minds of investigators relative to differences in specifications which need answering before specifications are taken too seriously. The old problem of the importance of gravity was raised, whether it merely insures some other property or is directly related to spray characteristics of the injection nozzle.

The importance of distillation characteristics to exhaust smoke, blow-by carbon or engine deposits, whether flash point is important to operation, whether per-cent ash indicates anything but foreign matter, whether sulfur should be reduced to 0.1% when 2% can be tolerated by some engines, whether power output is effected by differences in viscosities such as 35 to 50 seconds, and whether a high limit on cetane number is as important as a low limit, are all unanswered questions, Ainslee said.

Tests in one eastern laboratory on two diesel engines showed an optimum cetane number just under 60. Mr. Ainslee presented experimental data showing that the brake horsepower of two entirely different types of diesels dropped with increasing cetane number of the fuel at the rated full load of the engine. While the drop in horsepower was said to be possibly not a function of cetane number since each of the fuels was somewhat different distillation viscosity, etc., it was said to be significant that any engine will show this difference with only a change in fuel. Gallons per brake horsepower hour increased with cetane number. The range of cetane numbers for the decline of power was from 34 to 74.

Important also to combustion qualities is sufficient volatility to produce some evaporation of fuel spray droplets on which to start combustion when contacted with the hot compressed air. The problems of incomplete combustion, car-

Manufacturers' Recommended Fuel Specifications and ASTM Diesel-Fuel-Oil Classification for High, and Medium High-Speed Diesel Engines

	High Speed (above 1500 r.p.m.) 11 Manufacturers Spread	Ave.	ASTM No. 1-D	Medium High-Speed (1000-1500 r.p.m.) 29 Manufacturers Spread	Aver.	ASTM No. 1-D
1. Viscosity S.U. at 100° F.:						
a) Seconds, min.	34-39	35	33	32-40	35	33
b) Seconds, max.	44-55	47	50	40-100	62	50
2. Gravity, °A.P.I.:						
a) Minimum	26-37	29	..	22-30	27	..
b) Maximum	29-40	34	..	29-40	35	..
3. Sulfur, % max.	0.5-1.0	0.71	1.5	0.1-2.0	0.91	1.5
4. Hard Asphalt, % max.	0.1-3.0	1.12	..	0.05-3.0	0.91	..
5. Conradson Carbon, % max.	0.03-1.0	0.54	0.2	0.03-1.0	0.48	0.2
6. Ash, % max.	0.01-1.0	0.16	0.02	0.01-1.0	0.09	0.02
7. Water and Sediment, % max.	0.03-1.0	0.40	0.05	0.05-1.0	0.38	0.05
8. Flash Pt., °F. min.	150-175	153	Legal	135-150	149	Legal
9. Pour Pt., °F. max.	..	(a)	35 (b)	..	(a)	35 (b)
10. Heat Value, B.t.u./lb., min.	18,500-19,300	18,900	..	17,800-19,450	18,780	..
11. Distillation Characteristics, °F.:						
a) I.B.P., max.	..	..	..	..	..	..
b) 10% pt., max.	245-475	455	..	460-475	465	..
c) 90% pt., max.	660-700	687	..	620-700	664	..
d) E.P., max.	650-700	700	..	600-715	673	..
12. Ignition Quality:*						
a) Cetene No., C.C.R., min.	..	..	..	40-45	43	..
b) Cetene No., delay, min.	..	..	..	..	..	..
c) Cetane No., C.C.R. min.	45-45	45	..	45-45	45	..
d) Cetane No., delay, min.	45-60	51	45	35-50	43	45
e) Diesel Index No., min.	..	..	45	40-40	40	45
f) Viscosity-Gravity No., max.	..	..	0.86	..	..	0.86
g) Boiling Point-Gravity No., max.	..	..	188	..	..	188
h) S.I.T., min.	..	low	..	..	..	..
i) Aniline Point, °F., min.	..	..	..	..	..	..

(*) Ignition quality values cannot be considered entirely representative because of the differences in nomenclature used for expressing same.

(a) 10-15° F. below operating temperature.

(b) Lower pour points may be specified whenever required by local temperature conditions.

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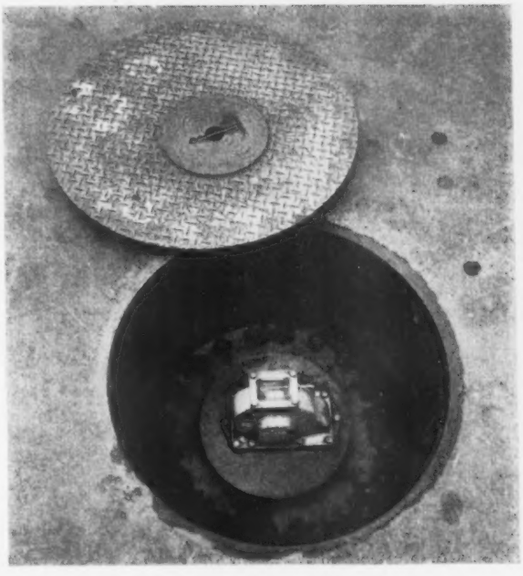

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bonization, and ring sticking are believed to be tied up with volatility and related with carbon residues determined by the Conradson carbon test but considerable uncertainty still exists as to the exact significance of these properties.

The value of diesel dopes is still an uncertainty. Of six major companies approached on the subject none is now using a dope in marketed diesel fuels. Their value is obscured in tests by the fact that cetane number and other ignition quality tests are not adequate to measure their improvement to a fuel. Of course, also, the addition of a dope is an added expense which has not yet been justified. The inadequacy of the delay method of determining cetane number is shown by instances where a fuel dope will cut the delay period but at the same time increase the rate of pressure rise, sometimes dangerously. If satisfactory results are obtained in any of the many laboratories working on the problem, it will mean that cracked distillate will come into wider use as fuel for high speed diesel engines, it is believed.

A number of these additives have been listed by W. H. Hubner of Universal Oil Products Co. They include alkyl nitrates and nitrites, nitro and nitroso compounds, oxidizing agents, peroxides, aliphatic hydrocarbons, bromine compounds, oxygenated copper compounds, and hydroxylamines. Some data are presented for tetralin peroxide, acetyl peroxide, and ethyl nitrate showing wide variation in apparent cetane number improvement by several methods of test.

Recent patents have been issued for the use of diazo-amino-benzene, triazenes characterized by the presence of at least one aryl nucleus, and sulfurized terpines such as pine oil. Two per cent of the latter raised the cetane number of a 50.5 cetane fuel to 58. One per cent of diphenyl triazene or of diazo-amino-benzene raised a 50-cetane fuel to 59, test data shows.

Some disadvantages have been pointed out, particularly as they affect other properties of the fuel. Cost data, which is highly important to the practicability of their use, is an unknown variable although in some instances cost eliminates proposed additives. A demand for some materials with present prohibitive prices would, no doubt, result in improved manufacturing technique which would reduce production costs.

As far as the cleanliness problem concerns the technologist, it may be considered practically solved. Sales and distribution divisions have come to appreciate the importance of clean fuel and have conducted educational campaigns carrying the message throughout handling systems and to consumers. This problem has been considered among the first three most important fuel problems but is less of a problem today with precautions being taken to assure delivery of clean fuel. Filter systems of good design can handle some dirt and not become clogged with wax where provision is made for heating in cold weather.

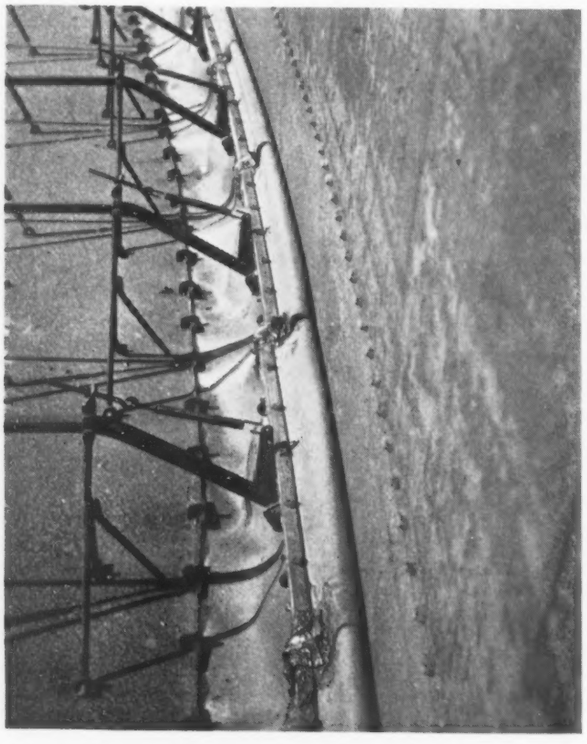
A few of the large diesel truck fleet operators solved the problem satisfactorily in the past by taking into their own hands the removal of dirt and wax. One of these operators reported at the annual meeting of the American Petroleum Institute three years ago that he centrifuged all his fuel to remove dirt and wax before using. This practice, of course, is not practical for the operator of only two or three small diesel engines.

The fact that particles are slower in settling out of diesel fuel because of greater viscosity has made the problem more pronounced than in gasoline where particles settle out quickly and diesel fuel injectors are more sensitive to these particles than the gasoline carburetor.

Although some companies think in terms of No. 2 furnace oil when comparing diesel fuel with this class of heating oils, the use of No. 3 furnace oil as diesel fuel is approved by one engine manufacturer on the ground that users of his engine are bound to use the cheapest fuel they can buy. This fuel oil is being used even where higher grades of fuel give easily noticeable differences in performance and it is felt that the best the manufacturer can do is to compromise by design and adjustment which will give the least difficulty with this fuel, whether it is cracked distillate or a straight-run product.

Adequate distribution of diesel fuel is a serious consideration and one which will not be entirely worked out until the diesel engine is in considerable more general use than at present. The relatively small demand has failed to interest many refiners and distributors in supplying a fuel meeting a generally approved average specification. The problem is complicated by the fact, for example, that diesels are being applied to construction machinery which may be employed on a big construction job in a locality for six months or a year and then move on to some distant project. Care must be taken by diesel truck operators, of course, that they are able to obtain fuel at points at which they may be called upon to go.

Of great importance to satisfactory diesel engine operation is the kind of care that is taken by the operator to use only fuels endorsed by responsible manufacturers. One refiner's view is that if operators are bound to use cheap fuels not meeting standard specifications, they should expect to get corresponding results in poorer operation and expensive breakdowns or overhauls just as low grade gasoline gives poorer performance as a rule. Coming from a fuel expert of a large oil company whose diesel fuels are giving satisfactory results, this apparently leaves the diesel fuel problem in the laps of the consumers. The education of the high-speed diesel fuel consumer is hampered by the widespread understanding that if it is a diesel engine it must be able to burn any fuel from crude oil to kerosine. This feeling is a strong sales force for the diesel engine and one which the salesman no doubt spends little time in correcting in detail, an effort which would hazard the prospective sale. Experience only will prove to many the value of specified fuels.



Looking down on the inside of a Wiggins Pontoon roof tank at the recently standardized secondary seal surrounding the roof on the tops of the shoes. These seals increase the efficiency of roofs for lap welded or riveted shells by preventing wind currents from whipping down between the shoes and the tank shell when the shoes are held a fraction of an inch away from the shell by overlapping joints or rivet heads

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Traces of Copper in Gasoline Determined by New Test

By G. H. Short* and W. A. Schulze*

ABSTRACT

A new laboratory test is devised by which traces of copper compounds may be determined in gasolines sweetened by the Perco copper chloride process. A solution of diphenylthiocarbazone, or dithizone as the name is shortened, in benzene is added to the sample under test, imparting a vivid green color. If copper is present this color fades to light yellow, the time required for fading depending on the amount of copper in the gasoline.

The test is reported as the number of minutes required for the green color to fade. A positive test for objectionable amounts of copper is one in which the period reported is less than 30 seconds. This article gives details of the test, and discusses the effect of many other products and conditions on the results of the test.

DURING the last several years, a number of articles have been published describing various aspects of the two Perco copper sweetening processes known as the "Copper Solution Method," and the "Solid Reagent Method" respectively,[1,2,3,4] but nothing has been published regarding the actual laboratory control methods and pilot plant tests which aided in the development of these well known processes. Among these so-called laboratory "discoveries" was one of tremendous usefulness which received the name "Copper Dye Test," this title being derived partly from a corruption of the name of the analytical reagent, and partly from the colorimetric aspect of the analytical method. This discovery made it possible to determine the presence or absence of copper compounds in treated products.

As explained in previous publications, minute traces of copper compounds accelerate color and gum formation in blends containing cracked gasoline, therefore, the treated products must be free of copper compounds. Since none of the testing methods described in the literature had satisfactory sensitivity and accuracy to detect copper compounds in the extremely low concentration range encountered in practice, copper treating was a sort of "hit or miss" affair until the "Copper Dye Test" was developed about four years ago. This test made it possible to study closely the variables in the treating operation, and to investigate thoroughly the problem of stabilization of treated products.

Another distinct advantage of this test is the rapidity with which it can be made; this factor makes it far superior to other test methods as a means of plant control. For example, whereas other copper test methods may have fair accuracy and sensitivity, the time required for testing may extend to as much as four to six hours or more. Such methods are obviously not feasible for routine control testing, and are only slightly better than actual storage stability determinations.

The "Copper Dye Test" makes use of the compound diphenylthiocarbazone, more commonly referred to as dithizone. This compound has been studied rather extensively by Fischer[5] and co-workers in connection with the determination of heavy metals in aqueous solutions and a number of publications have appeared within the last two years[6,7,8]. None of these references show the adaptation of this reagent to the detection of copper compounds in hydrocarbon oils.

* Research Dept., Phillips Petroleum Co., Bartlesville, Okla.

Diphenylthiocarbazone, or dithizone, when in solution in organic liquids, such as benzene or gasoline, imparts a brilliant green color to the solution. For this reason and for simplicity this reagent has been called a dye, and the test herein described is known as the "dye test" for copper.

The test depends on the instantaneous reaction between the dithizone and copper compounds present in gasoline to form a copper salt of the reagent. By this reaction the original green color of the solution in which dithizone is present is changed to the color due to the copper salt formed. The color due to the copper salt varies with the amount of the salt present and in the concentrations usually encountered in testing copper-containing gasolines is a red-bronze tint. Sometimes, the color is best described as reddish-violet. This copper salt is apparently rapidly altered soon after its formation, whereupon the reddish-violet color fades, leaving the gasoline or benzene solution with a pale yellow color. In the absence of copper, this yellow-colored oxidation product is eventually formed, and the speed of its formation depends on the concentration of dithizone in solution and on other factors to be discussed in detail in describing the procedure of the test. However, in the absence of copper or other interfering compounds, the transition from the green color to the yellow color is gradual. The number of minutes required for the color change is the dye test period for a sample of gasoline, and the medium for reporting test results.

A. Solution

The dithizone solution is prepared by dissolving the solid compound in c.p. benzene to obtain a concentration of two milligrams of reagent per 100 cc. of benzene. A convenient method of preparing the solution is to dissolve ten milligrams of the reagent (weighed on an accurate analytical balance) in a 500 cc. volumetric flask which is then filled to the mark with benzene. The reagent does not dissolve rapidly, and the solution should be allowed to stand several hours before it is used. A few tiny particles of solid will usually remain in the solution; these are evidently an impurity present in the reagent.

The reagent solution thus prepared deteriorates somewhat rapidly due to oxidation when stored, and the deterioration is very rapid when the solution is exposed to light—especially to direct sunlight. The supply bottle of solution should be flushed with oxygen-free gas and stored in a dark place, and each day small amounts poured out into a small (4 ounce) bottle for use in that day's testing. It is recommended that fresh solution be prepared at least every three weeks to avoid the misinterpretation of tests made with solution badly weakened by oxidation.

All glassware used in handling the reagent should be thoroughly cleaned and dried.

B. Procedure

1. Preparation of Sample. The gasoline sample to be used in the test should be carefully taken in a clean sampling bottle. Although repeated use of a sampling bottle is permissible as long as the test results are negative, it is suggested that the bottle be thoroughly cleaned after use for about six consecutive samples of gasoline.

Into a clean, dry four ounce bottle filter about 100 cc. of the gasoline to be tested. For the filtering operation use one sheet of Whatman No. 40 paper backed by one or two sheets of coarse paper (for example, E & D No. 617) which will completely remove any water from the gasoline.

Place the bottle of gasoline against a white background and out of direct sunlight. Add to the gasoline from a

pipette one cubic centimeter of the reagent solution. Do not shake the bottle. Until the tester is familiar with the color change involved, it is helpful to place beside the test a similar bottle with an equal volume of the gasoline (to which no dithizone is added) to be used as a reference. This is especially true if the gasoline being tested is already a yellow color.

Record for the result of the test the number of minutes (or seconds) elapsing from the time the dye is added to the gasoline until the green color is completely faded out. If the test shows the presence of copper, repeat immediately with a new sample of the gasoline in another bottle.

C. Notes on the Procedure

The dye test is exceedingly simple in execution, but it is equally sensitive to contaminating or interfering factors. According to the procedure described, the amount of reagent used in the test is only 0.02 milligrams of dithizone in 100 cc. of gasoline (2 parts in ten million). With such a small amount of reagent involved it should be obvious that a carelessly made test is meaningless. This fact is made more apparent by a consideration of the factors which affect the test. A detailed discussion of these factors follows:

1. Light. It has already been noted that light deteriorates the reagent solution by speeding up oxidation of the reagent. This effect is greatly magnified by the extreme dilution of the reagent by the procedure of the test. For this reason, the test should be made out of direct sunlight and the amount of light should be adjusted to the minimum which will allow accurate observation of the color change occurring in the gasoline being tested. For example, a gasoline which has a two minute dye test period on a bright day may have a period of six minutes or more on a cloudy day.

2. Caustic. Alkaline solutions in general destroy the green color of the dithizone and leave the yellow color associated with oxidation of the reagent. This may be due, for a time at least, to the formation of an alkali metal salt of the reagent.

3. Acid. Mineral acids, particularly hydrochloric acid, decrease the rate of oxidation of the dithizone or prevent the formation of metal salts. For example, a sample of dithizone solution which has been changed to a yellow color by shaking with a few drops of caustic can be converted back to a green color if a small volume of hydrochloric acid is quickly added and the mixture is agitated.

4. Water. The presence of water, especially if the pH of the water is above 7, shortens the dye test period.

5. Mercaptans and Sulfur. Mercaptans are excellent anti-oxidants and prolong the dye test period. Elementary sulfur apparently has no effect on the test.

6. Air. A large air space above the gasoline in which the test is being made, or agitation of the bottle so that more contact with air is afforded, shortens the dye test period.

7. Heat. In general the dye test period is slightly shorter the higher the temperature of the gasoline. Rapid heating of samples does not greatly affect the test, due perhaps to expulsion of air.

8. Lead Salts. Lead salts such as the sulfide and lead mercaptides react with dithizone to form a red colored salt. The color of the lead salt is sufficiently different in shade to be distinguished from the color of the copper salt if the operator has observed both colors frequently. The reaction of dithizone with lead makes the use of the test on gasolines containing doctor treated stocks rather difficult unless samples used in the test are filtered (or water-washed and filtered) carefully enough to remove the lead. The greatest difficulty lies in the general use of filter paper which is too coarse to remove very finely divided lead salts.

9. Copper Sulfide. Copper sulfide, the product of sodium sulfide stabilization of gasolines sweetened by the liquid copper process will react rather slowly with dithizone. It is necessary, therefore, to filter out copper sulfide which is harmless to the gasoline but which can cause erroneous conclusions to be made from dye test results.

10. Other Metals. Other heavy metals, such as zinc, cadmium and manganese, will react with dithizone to form highly colored salts. Fortunately these are seldom encountered in testing gasolines.

11. Aged Gasolines. The dye test is less satisfactory when used on aged gasolines. In the first place, dithizone is affected by the peroxides present in gasolines stored for a considerable period. Also, such gasolines (except straight run) may have a yellowish color which makes the dye test color changes harder to distinguish.

D. Interpretation of Results

The result of the dye test is reported as the time required for the complete fading or disappearance of the green dithizone color from a sample of gasoline to which one cubic centimeter of the reagent solution has been added. This dye test period, providing all precautions are observed, will depend on (1) the presence of copper in the gasoline, and (2) the amount of light reaching the gasoline during the test. The second factor may be disregarded to a large extent since the effect of light is of a different magnitude from the effect of the presence of copper in the gasoline, being an aid to the gradual fading of the green color. Copper compounds present in the gasoline (except copper sulfide) react instantaneously with the dithizone, and the green color will not remain more than a few (one to five) seconds unless the amount of copper present is insufficient to react completely with the tiny amount of dithizone added; in this case, the color change may be delayed as much as 30 seconds to one minute.

Since the dye test is designed to indicate the presence of enough copper to cause color loss in gasolines during storage, the dye test period must be translated into terms of the color stability of the gasoline upon which the test is made or of blends in which this gasoline may be used. Such a translation is based upon the correlation of the results of dye tests with the color stability of gasolines in storage.

In reporting the results of the dye test as positive or negative in terms of the copper content of a gasoline, these criteria have been used: (1) if the dye test period is less than 30 seconds sufficient copper is present to cause color deterioration in unstable gasolines; (2) if the dye test period is less than one minute but more than 30 seconds, a trace of copper may be present, but color loss will be negligible even in unstable gasolines; (3) if the dye test period is longer than one minute, no copper is present, and the total length of the period is dependent not upon the presence of copper, but upon some of the other factors already discussed as affecting the test. Thus, a positive dye test is one in which the period is less than 30 seconds.

Negative test results may vary widely. The average test period on blended gasolines from many sources has been three minutes. The average period on straight run and natural gasolines is normally much longer than on cracked gasolines and sometimes the period on a gasoline is as long as an hour. A sample exhibiting positive results should always be retested. When, in view of the history of the sample and after elimination of any questionable features of the determination, the possibility of a false positive result seems remote, the presence of copper may be further confirmed by another test method, such as the Perco benzoyl peroxide test, or an actual storage stability test if time permits.

Diphenylthiocarbazone From Eastman

This reagent may be obtained at 50 cents per gram, or $2.50 for 10 grams from Eastman Kodak Co., Rochester, N. Y., we are informed. The reagent is catalogued as "No. 3092 Diphenylthiocarbazone".

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Ipatieff Honored at A.C.S. Meeting Devoted to Study of Catalysis

By Arch L. Foster, N. P. N. Technical Editor

THE present period in petroleum technology may well be called the Catalytic Period, Dr. V. N. Ipatieff, veteran authority on catalysis said in his address as guest of honor at the annual dinner of the Petroleum Division, American Chemical Society. Catalysis began to play an important role in petroleum only ten years ago, he said in pointing out how rapidly the application of catalysts to reactions on petroleum products has progressed in recent years.

Summarizing the history of catalysis, in which history he has had a large part for a third of a century or more, Dr. Ipatieff characterized sulfuric acid as the mother of acid catalysts, it being probably the oldest catalyst of that type we have now. Aluminum chloride is the father of metallic halide catalysts, and was used 75 years ago in the famous Friedel & Crafts alkylation reaction.

Catalysis and the knowledge of their actions have been known since the first of the 20 century, Ipatieff reminded the petroleum chemists. Many of them were discovered before that time. The petroleum industry has been laggard; the catalyst has been here this long time, awaiting the enterprise of the petroleum chemist in adopting its use. Dutch chemists discovered the dehydrating action of clays such as alumina 150 years ago; only in the last few years has it been applied to dehydrogenation reactions on hydrocarbons.

Ipatieff warned against any harboring of the idea that we "stroll in the events of catalysis as in a dark forest", and that "we cannot predict what reaction will take place with a given substance." A conviction exists, he said among many people that the discovery of a new catalyst is accidental. Such a conception is far from the truth. Catalytic investigation is carried out by correlating the properties of the catalyst and the substance to be catalyzed, he pointed out.

Dr. V. N. Ipatieff, of Universal Oil Products Research staff, and authority on catalysis, honored by the Petroleum Division, American Chemical Society at a dinner in Baltimore, April 4

Two of the greatest aids to modern catalytic research have been the introduction of the use of elevated pressures, and the addition of helper substances, called promoters, to the main catalyst.

One of the greatest developments in high pressure catalysis is the hydrogenation of coal, as carried out by Bergius first in 1913. This phase of catalysis is being developed now along many lines by the petroleum industry, he indicated.

Alkylation, the addition of one hydrocarbon to another to produce a new, larger saturated molecule, was discovered 50 years ago by Balsohn, Ipatieff said, but it has been studied intensively by the petroleum industry only during the last few years, when we are developing methods for the manufacture of motor fuels extremely high in antiknock. Isomerization, or the changing of the chemical structure of a molecule without change of molecular weight, was first carried out in 1903; the petroleum industry is now working to adapt that reaction to refining processes.

Ipatieff refuted the idea that luck can play any appreciable part in the success of the catalytic researcher. Quoting a famous Russian general he said, referring to progress in the development of catalysis, "Yesterday luck; tomorrow luck; but to have luck all the time it is necessary to have ability." Honoring Dr. Ipatieff at this annual dinner was especially fitting, since the Petroleum Division sessions on Tuesday had been devoted exclusively to what is doubtless the greatest symposium on catalytic petroleum chemistry developments ever presented by a chemical organization.

Commercial polymerization plants operating with the aid of a catalyst are saving the industry 100,000 barrels of crude oil per year, Dr. Gustav Egloff, research director for Universal Oil Products Co., told the greatest assembly of petroleum chemists ever collected in one place in the history of the oil industry.

Forty polymerization units, most of them catalytic, are operating in refineries now, Egloff said. They produce from 2000 gallons to 150,000 gallons of high octane number gasoline each per day. They increase the refinery's gasoline production from 6% to 12% of the yields obtained without the use of the polymerization reaction, he stated.

Furthermore, alkylation in commercial units is now producing 90 octane number fuels from still gases. This new process produces in one simple reaction the same type of gasoline as has been made formerly by the two reactions of polymerization of unsaturated gases and hydrogenation of the resulting polymer with sulfuric acid or other catalyst. To produce the desired olefins from saturated paraffins or iso-paraffins an alumina catalyst with a chromic acid "promoter" has been perfected by Shell Development Co., which gives very high yields under mild operating conditions, of around 900° F. and nominal pressures, research director E. C. Williams told the 850 chemists assembled to take part in the symposium on catalysis which occupied all of Tuesday, April 4.

The total production of alcohols from hydrocarbon gases is not definitely known, Williams said, but is probably in excess of 2,000,000 pounds per year, he believes. For this synthesis catalysts are or may be used in one

part or another of the process, as for example catalytically dehydrogenating the paraffin gas, followed by hydration by sulfuric acid or other catalyst.

Isomerization of hydrocarbons to produce high octane number gasolines from low-grade material still offers some difficulties, but the process is moving rapidly toward the commercial stage. In fact information from reliable sources states that at least one small-scale commercial unit is now in operation, with probably others expectable within the next year. Isomerization is a process for changing the molecular structure of a hydrocarbon with little or more generally no change in molecular weight, to form a more complex molecule which shows higher anti-knock tendencies.

In many of these syntheses, and the processes by which new products are made, dehydrogenation or the removal of one or more atoms of hydrogen without otherwise changing the molecule is the first step in fitting the raw material for the main reaction which completes the finished product. Insofar, this feat of developing a dehydrogenation catalyst and process is decidedly fundamental in the system of modern refining technology which bids fair to revolutionize refining methods and refining economics.

Because paraffinic, saturated hydrocarbons are generally so non-reactive, it is necessary to form unsaturated hydrocarbons from them to increase their chemical reactivity, and thus to enable the chemist to produce a long list of important chemical compounds. Polymerization of light hydrocarbons begins with olefins, obtained either by the new dehydrogenation processes, or as a by-product of cracking. Alkylation requires that one of the reacting materials be olefinic, the other an iso-paraffin when producing super motor fuels from hydrocarbon gases. Cyclization, the formation of a saturated ring compound from a chain hydrocarbon, *may* be accomplished by dehydrogenation as the first step.

However, as was brought out by the leading hydrocarbon investigators in the country, these reactions, which have drawn the attention of petroleum chemists so strongly in recent years, are a small part of the number of important syntheses which may be made, in which formation of an olefin is the first step. Alcohols are produced from still gases with ease as the reference above shows. Dihydric alcohols, or glycols such as the now familiar anti-freeze called Prestone, products having two -OH groups per molecule instead of one as the more common alcohols have, are produced now in huge quantities from still gases. Trihydric alcohols, such as glycerine, are also now made from hydrocarbon gases by steps which involve olefin raw materials.

Halogen derivatives of hydrocarbons, a long list of them, are made by starting with olefins which may be dehydrogenated catalytically or pyrolytically as the maker may choose. Ethyl chloride, bromide and homologous products may be made simply, by direct halogenation of olefins, to be used in a large variety of commercial products or as intermediates in the chemical industry for the synthesis of innumerable compounds of great importance in medicine and industry in general.

It is easy to see, therefore, how important a practicable commercial process for dehydrogenating paraffin hydrocarbons is. Consequently many laboratories have bent every resource in recent years to perfect such a method. In the development of process for accomplishing this step the Shell company investigators divided catalysts into four groups, Williams stated. These four are:

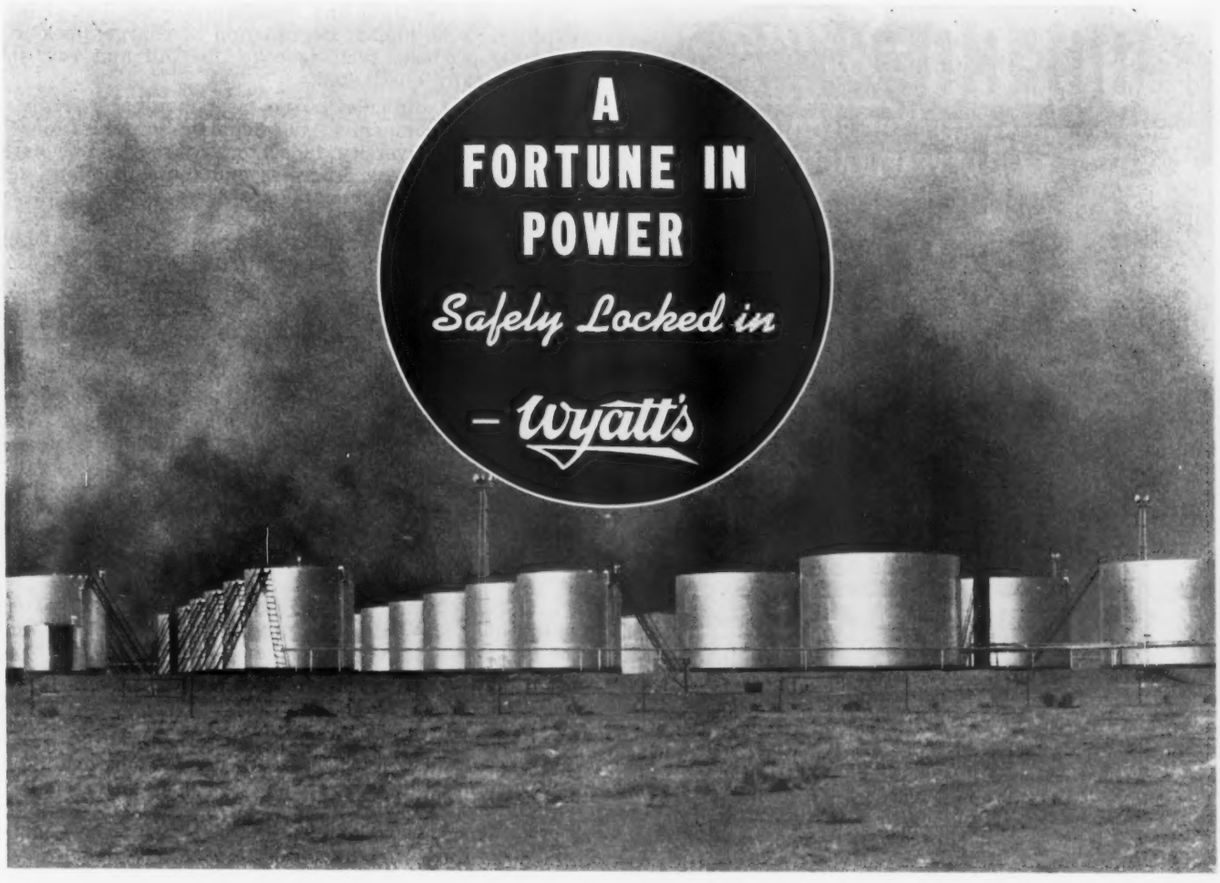
1. Catalysts especially strong in breaking the carbon-to-carbon bond.

2. Catalysts with only slight activity in breaking this C-C bond.

3. Catalysts which are slightly effective in removing hydrogen, that is in breaking the C-H bond.

4. Catalysts which have a strong activity for breaking this C-H bond.

Of the last group this laboratory found that alumina



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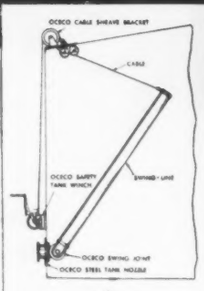

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activated by the addition of chromic oxide is the most useful catalyst yet tried. One interesting fact Williams mentioned is the change in the effect of certain catalysts when combined with other catalysts with different tendencies. Iron and nickel when used alone make almost perfect catalysts for breaking the bond between carbon atoms. When combined with alumina, these two metals lose this tendency, and become good dehydrogenation catalysts, he said.

Traces of water vapor, and of hydrogen sulfide present during the dehydrogenation reaction, promote and accelerate the removal of hydrogen from the hydrocarbon. However, if H_2S is present during the regeneration of a catalyst containing chromic oxide, sulfur dioxide is formed and the catalyst is "killed." Addition of H_2S after the dehydrogenation reaction starts increases the speed of the reaction greatly at any given space rate of passage of hydrocarbon vapor over the catalyst mass. However, if the space rate is increased beyond the optimum for any given reaction, the reaction rate falls off, he stated. Furthermore, only a small amount of water vapor is needed to accelerate the reaction, and any amounts of water above 0.1 mol should be removed from the vapors before passing over the catalyst, Williams reported.

On the isomerization reaction also the petroleum chemist is pinning great faith eventually to simplify and reduce the costs of improving the quality of hydrocarbons to be used as motor fuels, as well as for the preparation of intermediates for the synthesis of other products by the alkylation, polymerization, aromatization and similar reactions. The problem of producing high octane number gasoline from the heavier ends of straight-run motor fuel has always been a serious one in recent years. Up to the present this was solved with considerable expense and loss of material by reforming pyrolytically. If and when the refining chemist can produce a process for catalytically isomerizing these comparatively simple, mainly straight-chain products with octane number varying from almost zero to 50 or 60 to form material having 70-85 octane number, the advantage to the refiner and to the consuming public will be tremendous, technologists interviewed during the meeting believe. Not only should such a process be cheaper in operating and installation costs, but yields are expected to be higher, degradation of charge stock to less valuable products such as coke, fuel oil and gas, should be practically eliminated.

It is not difficult to see why the research divisions of refining companies, development organizations and college and university laboratories are driving hard to learn more of these processes and these reactions, in the effort to develop commercial processes. Most of these organizations of course have not disclosed just how far they have been able to progress in a commercial adaptation of this or that method. T. Tait, of Anglo-Iranian Oil Co., of London, who presented the paper on alkylation which he wrote with A. E. Dunstan and others, could not disclose the capacity of the plant that company is operating in the East for alkylating olefins from still gases by iso-paraffins from the same source. However, when pressed he indicated that the unit's capacity "is considerably greater than 500 barrels per day." The announcement of this process in the literature in 1938 is the first disclosure of a commercial process using sulfuric acid as catalyst at low temperatures for this reaction. The same type of process have been under investigation in this country for some years, and the unit or units now reported to be operating in this country utilize the same catalyst, according to the best information available.

In prosecuting the study of these important reactions which have come to the fore with such rapidity one of the crying needs is the completion of more exact data on the physical properties of the raw materials under study. The chemists need to have more accurate measurements of heats of fusion and vaporization, of heat capacities, of free energies of entropies and other data, in order to facilitate and make more accurate the calculations dealing with equilibrium conditions and a host of details which are necessary in developing these reactions into commercial processes, and to extend our knowledge of the chemistry involved.

Expands Chemistry Department At Case School of Applied Science

CLEVELAND, April 15.—Formal opening of a new chemical engineering laboratory at Case School of Applied Science took place here today. At a dedicatory luncheon preceding inspection of the building, Dr. W. R. Veazey, chief of research, Dow Chemical Co., and former chemistry department head, was the principal speaker.

The new building is a modern industrial type providing extensive facilities for teaching, research, and plant design. The main building, 104 by 61 feet, comprises three stories with a full basement and pent house. An annex is 44 by 60 feet. One of the features is a fuel, water and lubricants laboratory said to be one of the best equipped scholastic laboratories of its type in the country. The laboratory was equipped by A. Friedman, president of Chemical Rubber Co., Cleveland.

The annex houses unit operations and chemical engineering equipment. Large equipment needed in experiments dealing with distillation, absorption, and evaporation is located here. Equipment now being installed includes a bubble plate column and an absorber tower which can be used interchangeably, and a packed column with the equivalent of 80 plates.

Four bombs are installed for high pressure work such as hydrogenation and these are all in explosion-proof shelters. Considerable equipment for heat exchange studies and line friction losses is included in the basement of the main part of the building. Other equipment includes that for water filtration work and desulfurizing gas. Furnaces have been built which have sufficient capacity for work with petroleum as well as other purposes.

The new building cares for approximately 40% of the space needs of the department. Until additional units are added the 44-year-old building will continue to be used. Eventually the new building will become a wing of a still larger building which will have a similar wing on the other side.

Chemical engineering laboratory, Case School of Applied Science, Cleveland, was completed recently at a cost of more than $300,000. The new building is the first unit of a group to house the department of chemical engineering and meets about 40 per cent of the present space needs of the department

Dr. C. F. Prutton '20, present chemistry department head, has a considerable interest in petroleum chemistry which follows the traditions of the school. Professor C. F. Mabery, first head of the department, was a pioneer investigator in the constitution of petroleum and worked with John D. Rockefeller Sr. in the early days of the Standard Oil Co.

O. D. Donnell, Case '06, is one of two Case graduates who are presidents of large oil companies. Ohio Oil Co. has been headed by Donnell for 12 years. He is treasurer of the American Petroleum Institute

D. P. Moran, Case '11, has served as president of Continental Oil Co. since 1928. Moran is a director of the American Petroleum Institute and former vice president in charge of the division of manufacturing

For 50 years he was a contributor to the scientific journals on the subject of petroleum chemistry. Following his death the petroleum division of the American Petroleum Society presented Case School with a plaque memorializing his services. His entire estate was willed to Case School to endow a professorship in chemistry. Associated with Dr. Mabery as a student and in part of his work collaborator was J. H. Byerley '95 who now lives in retirement in Los Angeles.

Under the supervision of Dr. Prutton considerable research has been carried on in petroleum, petroleum derivatives, and allied fields. Dr. Prutton holds a large number of patents on lubricants, production of motor fuels, methods of lubricating and reducing friction, and lubricant additives. He has written extensively for the Journal of Industrial Chemistry and is a member of the consulting staff of Lubri-Zol Corp. and Dow Chemical Co.

Among Case graduates who are well known to the oil industry are two presidents of large oil companies: D. J. Moran '11 of Continental Oil Co. and O. D. Donnell '06, of Ohio Oil Co. Donnell has been associated with Ohio Oil Co. for 44 years which goes back considerably before his graduation. He became a director of the company in 1913, vice president in 1922, and succeeded his father as president in 1927. He is now treasurer of the American Petroleum Institute.

Dan Moran has been president of Continental Oil Co. since it merged with Marland Oil Co., of which company he had been president a short time. He has been in the oil business about 28 years since leaving Case. Born at Cygnet, Ohio, then an important oil town at which his father was stationed with the Buckeye Pipe Line Co., he had an early interest in the oil industry which continued after graduation from Case. Joining The Texas Co., he became chief engineer at Port Arthur, then vice president, director, and member of the executive committee for six years prior to his taking the presidency of Marland Oil Co. He has served as vice president of the American Petroleum Institute heading the refining division and is now a director.

L. S. Bale, former vice president in charge of manufacturing of Standard Oil Co. of Ohio who died three years ago, was a graduate of the class of 1909. From graduation until the time of his death he was with Standard. He was the only alumni ever to serve more than one term as alumni president.

K. H. Smith '17, and F. A. Nason '22, president and vice president respectively of Lubri-Zol Corp., Cleveland; Harold M. Davidson '21, general superintendent of Nederlandsche Koloniale Petroleum Mij., Sumatra; J. L. Cannon '13, manager, Fullers earth department of Sinclair Refining Co., Olmstead, Ill.; and I. L. Klein '03, superintendent, Continental Refining Co., Oil City, Pa., are other graduates known to many in the oil industry.

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Activities OF EQUIPMENT MANUFACTURERS

INSTRUMENTS—Instruments for determining condensate purity in steam plants are described in a new 20-page catalog (N-95-163) issued by Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia. The catalog shows how a knowledge of condensate conditions helps to effect operating economies.

* * *

FLOW CONTROL—A new bulletin No. 105, entitled "Three Element Feed Water Control" has been issued by Bailey Meter Co., Cleveland, Ohio. New bulletin No. 194-A presents an electrical telemetering system.

* * *

CONDENSERS AND COOLERS—A new bulletin (No. 1601) on the G-R Bentube section has been published by The Griscom-Russel Co., 285 Madison Av., New York. One of the features is a full-page photograph showing scale which has been shed by the flexure of the Bentube elements during normal operation. Several pages are devoted to curves of tables for refinery engineers.

VALVE POSITIONER—Development of a new valve positioner for use on diaphragm control valves is announced by The Bristol Co., Waterbury, Conn. The device overcomes the effect of friction in the valve stem and top, it is said, and assures a proportionate valve stem travel for the slightest change in pressure of the air from the controller.

* * *

RE-REFINING. "Retrol and Its Use in the Re-refining of Used Oils" is the title of 16-page booklet recently re-issued by Filtrol Corp., 315 West 5th St., Los Angeles. The booklet describes the application of the filtering material Retrol to the process.

* * *

TESTING APPARATUS—Catalog 165 on petroleum testing apparatus is announced by Precision Scientific Co., 1750 N. Springfield Av., Chicago. It contains 112 pages of profusely illustrated material on petroleum laboratory equipment.

War and Our Oil

N. P. N. Staff Writer, who followed the U. S. Oil Industry through the World War when it suddenly shouldered a heavy burden, tells of the tremendously-increased demands which might be made on the industry now in event of European war

By V. B. Guthrie
N. P. N. Managing Editor

Is War Likely?

Oil men say no—Washington says "inevitable."

New York oil men familiar with the export trade, who were interviewed in preparation of this article, believe that there will not be a war in the immediate future. Nearly every one had a different reason for his opinion, but they were unanimous that there would not be a war now.

In Washington, there was a strong feeling that war is likely, with some experts going so far as to say it is "inevitable".

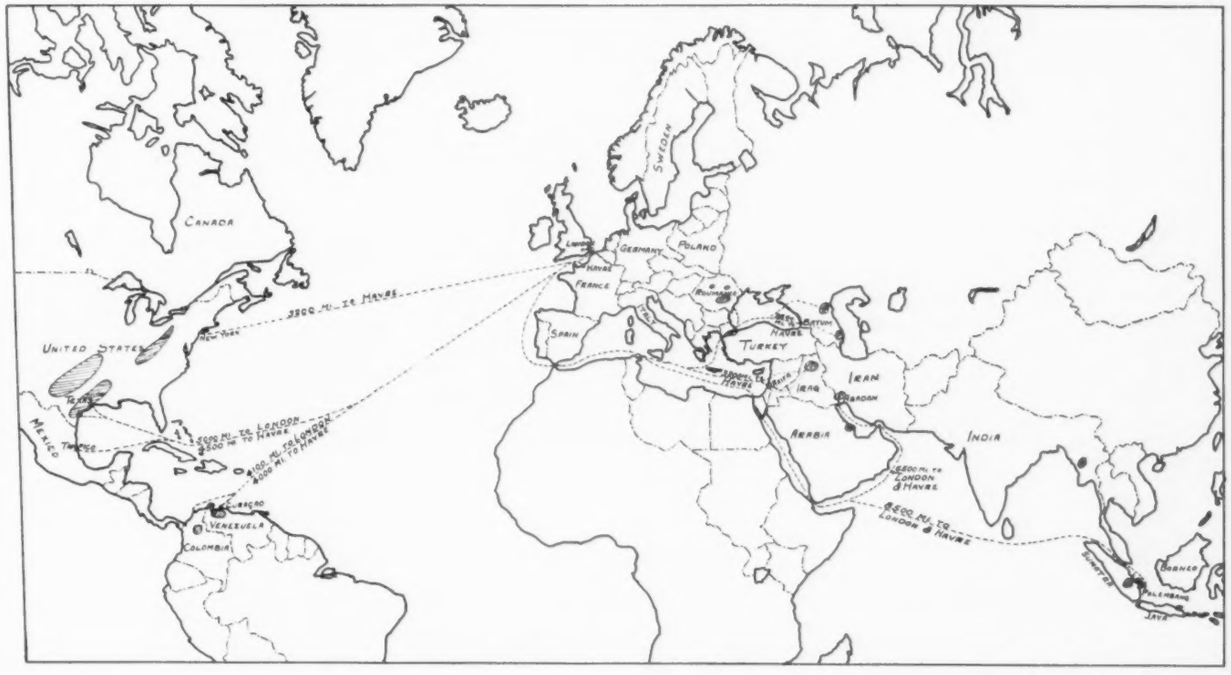
Without any intent of being alarming, N. P. N. herewith presents a complete picture, as best can be forecast now, of what demands would be made on the oil industry IF war comes.

WHAT will be the demand on the oil industry in this country if a general European war breaks out?

As much as everyone dreads the thought of any of the European nations being plunged into armed conflict, it must be recognized that oil would play as vital a part in a war as any resource.

A conservative estimate, as set forth in detail later in this article, gives 200,000 barrels a day as a minimum wartime increase in our export trade in petroleum and its products. If there were added to this only a

Relative Distances from World's Oil Fields to England and France



Contrary to the opinion of many persons, the distances by tanker from oil shipping ports in the Americas to England and to Havre, France, are less than from some of the fields by which shipments are normally made through the Mediterranean, thus adding another reason why the oil fields in South America and the U. S. would face an increased demand if an European war broke out. For example, the distance from U. S. Gulf Coast ports is only 5000 miles to England, while the distance by tanker from the Iran field in Persia through the Mediterranean is 6500 miles. Distances on the map are in nautical miles. Location of oil fields is shown by shaded areas

Oil Imports, by Countries, Into United Kingdom, France, Germany and Italy, in 1937 and 1938, of Crude, Gasoline, Kerosine, Gas Oil, Fuel Oil and Lubricants

United Kingdom
(Thousands of bbls.)

Country Exporting	1938	1937
U. S.	16,065	10,845
Venezuela	3,968	2,370
N. W. I.	30,752	32,621
B. W. I.	5,946	3,687
Iraq	4,058	3,373
Iran	17,910	17,193
Roumania	2,947	4,070
East Indies	681	671
U. S. S. R.	2,283	2,449
Mexico	1,553	4,133
Peru	625	2,242
TOTAL from above countries	86,788	83,654

France
(Thousands of bbls.)

Country Exporting	1938	1937
U. S.	20,876	11,510
Venezuela	4,746	4,545
Colombia	2,966	2,734
Ecuador	338	497
Peru	2,602	3,278
Central America	1,040	1,065
Iraq	23,445	23,356
Iran	830	1,358
Roumania	1,872	5,028
East Indies	220	100
U. S. S. R.	739	1,377
TOTAL from above countries	59,674	54,848

Germany
(Thousands of bbls.)

Country Exporting	1938	1937
U. S.	8,891	7,424
Mexico	3,063	2,391
Venezuela	1,896	1,020
Roumania	3,646	4,177
U. S. S. R.	562	2,192
Iran	1,425	1,126
Peru	1,046	1,221
N. W. I. and Other America	10,680	7,512
East Indies	1,510	1,155
TOTAL from above countries	32,719	28,218

Italy
(Thousands of bbls.)

Country Exporting	1938 Volume
U. S.	6,866
Venezuela and N. W. I.	3,008
Iraq	1,662
Iran	989
Roumania	3,629
Colombia	822
East Indies	432
TOTAL from above countries	17,408
TOTAL for all countries	18,312

portion of the increase of 67 per cent that occurred in our domestic demand in the World War, the additional demand on the U. S. oil resources could easily reach the 800,000 barrels daily estimate that was recently made to heads of the U. S. government departments by a technical Energy Resources Committee.

While this committee refrained from predicting war, it did estimate that "during a national emergency," the demand for petroleum would be increased by one-fourth, which would be about 800,000 barrels at our present rate of consumption. This brief reference to war oil needs is part of a general report to Congress urging a national energy resources policy in the interests of national defense.

Men who were connected with oil companies during the World War and remember the demoralized condition of the industry for a few months immediately after the outbreak of war then, do not believe there will be any such lag in export or domestic business should war come today.

In 1914 no one believed that war would come until fighting actually started. Neither governments nor business firms had considered war in their planning, while at present the world has been living for several months with war as definite prospect. In 1914 the export trade of the U. S. was principally in kerosine, a product which was of limited importance in war operations, and dislocation of trade was inevitable until war demand for gasoline, fuel oil and other products made itself felt. In 1914 also a good share of the tanker shipping was under German registry and there was confusion until it could be registered under other countries.

However, by the end of 1914, oil men who had feared, when war broke out, that they would have to close their refineries for lack of business, were admitting that their business had held up better than they had anticipated and that the business outlook was even better.

With military preparedness programs well under way by practically all nations, including the U. S., it is not believed that there would be any appreciable dislocation of domestic business if war broke out now, and that the work of furnishing all kinds of supplies to some of the nations at war would take up a good deal of the present unemployment, which would be felt in the marketing branch of the oil industry. In the World War, the improvement in domestic business through supplying war materials of all kinds to England and France and other nations made itself felt within a few months.

Oil Tanker Fleets By Countries

	Gross Tonnage	% World Tanker Fleet	% Total Fleets of Resp. Countries
Gt. Brit. & Dom.	3,013,687	28.1	14.5
United States	2,758,642	25.7	24.2
Norway	1,972,469	18.4	42.8
Holland	561,946	5.3	19.7
Panama	450,261	4.2	*
Italy	380,488	3.5	11.7
Japan	345,849	3.2	6.9
France	241,896	2.2	8.4
Germany	202,221	1.9	4.8
Sweden	144,899	1.3	9.2
Other countries	643,322	6.2	6.2
Total 1938	10,715,680	100.0	16.0
Total 1914	1,478,988	....	3.3

The total number of tankers registered for all countries by Lloyd's register in the middle of 1938 was 1655, with Great Britain owning 410 and the U. S. 418.

The total number of tankers registered when the World War broke out in 1914 was 366.

Today the average speed of oil tankers is said to be 12 to 13 knots an hour and the fast new tankers will do better than 19 knots. In 1914 the average tanker speed was between 9 and 10 knots.

SOME of NATIONAL PETROLEUM NEWS editorial staff reported for its news columns what happened in the oil industry during the World War that started in 1914. It is on the background of this experience and from facts and opinions secured the past few days from interviews with oil company experts in New York and with various authorities in Washington that this article is written.

Several factors combine to point to a tremendous call on the oil resources of this country in the event of war. These can be summarized as follows:

1—The extreme degree of mechanization of armies today makes oil supplies necessary even ahead of munitions, and navies operate almost entirely on oil as fuel.

2—The oil fields of the world, outside the U. S. and possibly those of Mexico and South America, are vulnerable to air attack on pipeline and shipping terminals and refineries.

3—Distances from South American

The Cimaron, one of a fleet of 12 speedy tankers to be built by the Standard Oil Co. of New Jersey in aid of national defense. The government pays about 28 per cent of their cost in order to secure new features, chiefly relating to speed. The tankers will make over 19 knots, almost twice the speed of ordinary tankers. They have a cruising radius of 10,000 miles, will carry 150,000 barrels and are equipped to fuel navy ships at sea. A speedier navy requires speedier supply ships, far faster than is economically desirable with tankers in ordinary commercial trade

Exports of Principal Oil Products in Bulk from U. S. To England, France, Germany, Italy, Japan from 1934 through 1938.

(Figures in thousands of barrels, except grease, in thousands of pounds)

	1934	1935	1936	1937	1938	Change In 5 Years
To England:						
Crude	.....	411	160	753	153	.....
Gasoline	3,946	4,326	3,593	4,639	8,750	+122%
Kerosine	2,174	739	936	1,274	1,540	— 29%
Gas Oil & Dist.	1,881	1,320	1,101	2,068	3,729	+ 98%
Resid. Fuel	190	151	189	379	497	+162%
Lubricants	1,705	1,852	2,054	2,452	2,319	+ 36%
Total Above Products	9,896	8,799	8,033	11,565	16,988	+ 72%
Grease, Lbs.	12,908	14,702	11,906	10,609	6,360	— 51%
To France:						
Crude	10,204	10,348	7,463	10,066	16,743	+ 64%
Gasoline	1,610	2,301	815	1,744	2,864	+ 78%
Kerosine	86	.....	.....	.....	4	— 95%
Gas Oil & Dist.	463	66	104	978	86	— 81%
Resid. Fuel	.....	.....	.....	.....	153	.....
Lubricants	805	527	477	392	421	— 48%
Total Above Products	13,168	13,242	8,859	13,180	20,271	+ 54%
Grease, Lbs.	3,957	3,899	3,884	4,316	4,307	+ 9%
To Germany						
Crude	380	1,531	1,176	1,430	1,223	+222%
Gasoline	303	684	540	990	2,101	+593%
Kerosine	119	5	.....	84	.....	.....
Gas Oil & Dist.	565	779	2,171	2,690	3,623	+541%
Resid. Fuel	.....	.....	264	.....	.....	.....
Lubricants	938	911	1,099	1,121	984	+ 0.5%
Total Above Products	2,305	3,910	5,250	6,315	7,931	+244%
Grease, Lbs.	8,952	6,996	7,919	4,960	1,874	— 79%
To Italy:						
Crude	446	1,607	1,807	4,544	6,751	+1,414%
Gasoline	62	423	343	436	419	+576%
Kerosine	88	31	7	94	.....	.....
Gas Oil & Dist.	422	770	747	464	407	— 4%
Resid. Fuel	.....	179	942	257	933	.....
Lubricants	331	461	265	350	257	— 22%
Total Above Products	1,349	3,471	4,111	6,145	8,767	+550%
Grease, Lbs.	2,960	3,302	2,051	2,094	1,307	— 56%
To Japan:						
Crude	6,693	433	10,397	15,118	21,290	+218%
Gasoline	1,075	697	903	852	501	— 53%
Kerosine	373	30	.....	180	.....	.....
Gas Oil & Dist.	3,502	5,129	4,990	6,308	5,297	+ 51%
Resid. Fuel	4,415	4,163	4,265	4,045	3,030	— 31%
Lubricants	252	285	296	412	256	+ 2%
Total Above Products	16,310	10,737	20,851	26,915	30,374	+ 86%
Grease, Lbs.	4,638	6,922	6,388	8,920	4,736	+ 2%

France, Italy and Japan have developed some refining capacity in the last few years which have operated on American crude. Refineries in these countries are practically state enterprises. What refining capacity England has operates on crude from Asia.

ports and ports on the Gulf Coast and East Coast on this country are relatively short, even as compared with distances from some of the fields in the Far East, from which oil now moves to France, England and other countries because of their ownership in such fields.

4—Tanker tonnage, now close to 11,000,000 tons, less than 1,000,000 tons of which is held by the three facist powers of Germany, Italy and Japan is believed adequate to transport oil supplies to the "democratic" nations that might be involved. Ten million tons of tanker capacity represents cargo capacity for well in excess of 100,000,000 barrels per one way movement.

5—Public opinion in this country as reflected in various ways and the general feeling at Washington is that this country would supply needed war materials to any group of powers fighting the aggressive dictator nations. It is believed likely that the neutrality act will be amended to allow petroleum as well as other supplies to be shipped to France and England particularly, possibly to other countries as well.

The actual extent of oil demand for armed forces in conflict, where millions of men are engaged and where navies are cruising constantly, in place of using oil for their "standby" needs only, is staggering to contemplate. English military authorities are said to have stated that their war demand would be two to three times as much as their present consumption. Great Britain imported 86,788,000 barrels of petroleum and its products in 1938 from principal oil exporting countries and some authorities give its consumption as higher than this figure. France imported 59,674,000 barrels, a combined total of 146,462,000 barrels, or a daily combined demand from the two countries of over 400,000 barrels, if these import figures are considered as demand.

Even double that consumption, and granting that not all of this would come from this country, and some idea can be gained of the big demand for oil from nations engaged in large scale military operations.

Also, from the experience of the oil industry in the last World War, it is certain that demand for oil supplies would be greatly increased from many commercial sources as well. Commercial shipping carrying war and other supplies would use far larger volumes of fuel oil. The railroads in this country would soon be operating with their full facilities and consuming vastly more fuel oil and lubricants. During the last war rail movement of supplies for war materials was so great that many other goods were embargoed entirely. Truck movement of goods on the highway would be much greater and the general consumption of gasoline by motor vehicles in this country would be much larger as unemployment vanished. As our own country's military preparedness program increases under its present schedule, experience in the last war shows that the government itself will be a far larger user of petroleum products.

In setting up the following estimate as to what the war oil demand might be from Europe, it is assumed that the English and French navies would control shipping and that the tankers of these countries and their allies would be free to come to ports in the Americas. Of Great Britain's imports, study of accompanying tables will show, 27,879,000 barrels were imported from Iraq, Iran, Roumania, Russia and the East Indies and that France received 27,106,000 barrels from the same fields, a total of 54,985,000 barrels. For these two countries these sources of supply would be cut off if the Mediterranean were closed to their shipping.

OF THE 1938 consumption of these two countries, 91,477,000 barrels came from the U. S., Mexico and South America. Assuming that, in the event of war, the oil demand of these two nations would be doubled—military authorities of England and France say the war oil demand would be two to three times the normal consumption of a country—on the basis of 1938 consumption, they would need an additional 91,477,000 barrels from the Americas and twice the volume of 54,985,000 barrels from other sources which they might be shut off through the closing of the Mediterranean. This would make a total of 201,447,000 barrels, a daily average of 551,000 barrels,

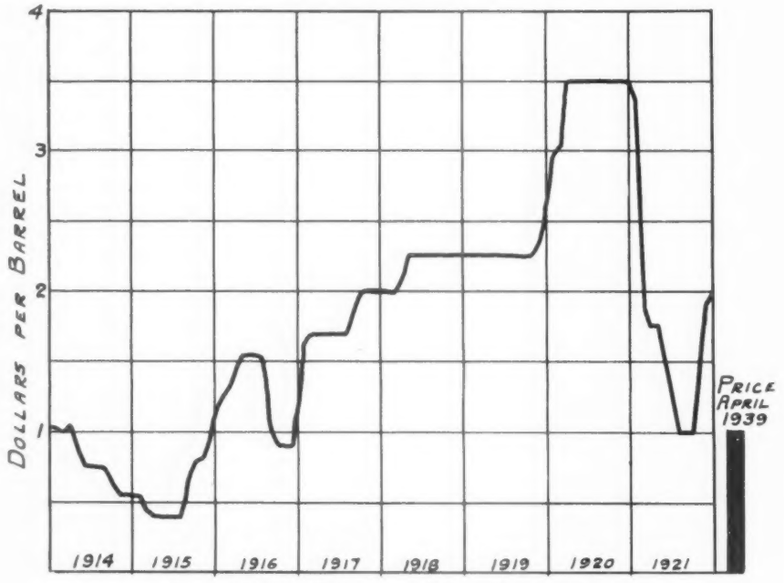
Stocks of Petroleum Products in Europe

(From New York Times, Dec. 4, 1938)
(Figures in Thousands of Barrels)

	Dec. 31, 1936	Dec. 31, 1937	Latest 1938 Figures
Austria	991	978	929 (Mar. 31)
France	18,443	19,773	22,134 (June 30)
Germany	10,573	10,390	10,917 (June 30)
Hungary	1,103	1,391	1,368 (Mar. 31)
Italy	6,503	5,047	6,408 (July 31)
Rumania	9,233	6,996	9,202 (June 30)
Russia	69,236	72,055	72,928 (May 31)
Sweden	1,424	1,909	*
Switzerland	384	384	433 (July 31)
Netherlands	2,649	3,492	*

*Assuming no change in stocks in Sweden and The Netherlands since Dec. 31, 1937.

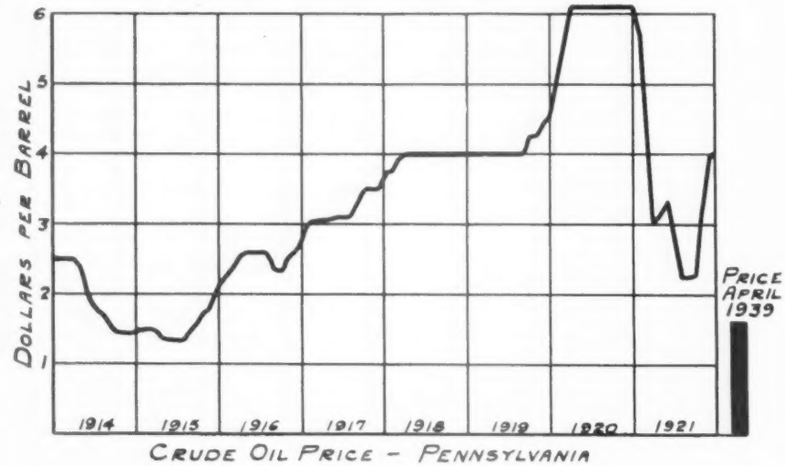
Oil Industry Held Down the Price of Mid-Continent Crude During World War



CRUDE OIL PRICE – MID-CONTINENT

The drop in the price during 1914 and the early part of 1915 was due to the new big Cushing oil field in Oklahoma, rather than to dislocation of trade caused by the outbreak of the European war. Spurred by increased demand and high prices for drilling and producing equipment, the price reached $2.25 a barrel in April, 1918, and was pegged at that point by the industry and the government for the rest of the war. The higher price of $3.50 per bbl. in 1920 was the result of boom demand both in this country and in export trade. That price, with all the frantic war drilling to insure supplies for a long war, sent the industry into a flood of oil from which it is still suffering. The highest the price has been since was $2.01 in 1926 when it slumped back and was knocked under a dollar by East Texas and kept there for five long painful years.

Pennsylvania Grade Crude Price Also Held Back During World War



CRUDE OIL PRICE – PENNSYLVANIA

The price of Pennsylvania crude was "pegged" by industry and government when this country entered the 1914-18 war. The drop in price in 1914 was in recognition of the big volume and high quality of oil that came from the new Cushing, Okla., field, and Pennsylvania refiners also suffered loss of kerosine and lubricant export trade at start of war. The price was pegged at $4 but when war was over shot to a high of $6 per barrel. It dropped precipitately with other crudes on the after-war flood of oil and has stayed down ever since, being priced at $1.65

to come from the U. S., Mexico and other countries in the Americas.

If their war demands were three times normal consumption, England and France would need three times the 54,985,000 barrels which they formerly received from sources using the Mediterranean and twice what they were taking in 1938 from the Americas, or a total of over 950,000 barrels daily.

Offsetting this increased war demand from England and France would be the loss of our present export trade to Germany, Italy and likely Japan, which latter nation was by far our best customer for petroleum and its products in 1938. Accompanying tables giving the details of our export trade to these countries show that the U. S. was shipping them an average of 129,000 barrels of petroleum and its products daily throughout 1938.

DEDUCTING this amount of 129,000 barrels daily from the above wartime demand of England and France of 551,000 and 950,000 barrels would reduce their needs from the Americas to 422,000 and 821,000 barrels daily respectively. It would also seem a logical deduction, assuming that France and England would control ocean shipping in the event of war, that Germany, Italy and perhaps also Japan would be cut off from the petroleum supplies they are now receiving from Mexico and South America. Figures are available in accompanying tables on imports by Germany and Italy from Mexico and South America in 1938 but not for Japan. Germany was importing from these sources at the rate of 45,700 barrels a day in 1938 and Italy at the rate of 10,500 barrels. This total of 56,200 barrels applied to the war demand from France and England from the Americas in general would reduce it to 365,800 barrels or 764,800 barrels daily, depending on whether wartime demand was taken as twice or three times normal peace time demand from these countries in 1938. The offsetting trade factor of Mexico and South America with Japan is not now known as to oil.

With refinery operations today flexible in their ability to turn out the desired refined products without waste or loss of crude and with war oil demands calling for the same products as are turned out by refineries now for commercial needs, the question of war oil export demand on the U. S. resolves itself into how 366,000 barrels daily or a possible 765,000 barrels daily, to use round figures, of additional net crude needs would be allocated as between the U. S., Mexico and South America.

Mexico would be an uncertain factor in war time oil export trade. A good share of its production since its "expropriation" of the American and English owned oil properties last March has been going to Germany and Japan. In the event of its present

U. S. Domestic Consumption and Exports of Petroleum 1913-1921

(Domestic consumption is indicated by consumption of crude as reported by the U. S. Geological Survey, minus exports of crude and products. No actual figures as to domestic consumption of oil products were available at this time. Exports were reported in detail, however, by the Department of Commerce)

(Figures in Thousands of Barrels)

	1913	1914	1915	1916	1917	1918	1919	1920	1921
*Total Crude Consumption	261,692	261,293	290,772	324,192	378,317	412,273	420,462	530,532	526,032
Exports:									
Crude	4,658	2,970	3,768	4,096	4,098	4,901	6,019	8,757	8,940
Gasoline and Naphtha	4,370	4,993	6,705	8,473	9,902	13,318	8,860	15,269	12,692
Kerosine	24,974	24,058	19,928	20,350	15,670	11,693	23,313	20,730	17,833
Gas and Fuel	7,632	15,102	19,038	23,038	26,749	28,589	13,925	19,705	20,120
Lube and Paraffine Oil	5,087	4,563	5,707	6,210	6,677	6,127	6,543	9,574	6,888
Residuum	655	1,648	396	154	27	6	.....	.....	.....
Total Exports	47,376	53,334	55,541	70,320	63,124	64,634	58,660	74,035	66,473
Indicated Domestic Consumption	214,316	207,959	235,231	523,872	315,193	347,639	361,802	456,497	459,559

*Consumption of domestic and imported petroleum in United States and territories, as reported by United States Geological Survey.

customers being cut off by the English and French navies in a war, it is possible its production of around 100,000 barrels a day could be bought by other nations. It is not considered in this estimate of the allocation of a war demand, however.

Considerably larger volumes of crude could be taken from some of the South American oil fields in a relatively short time, Venezuela and Colombia principally. In Venezuela the Gulf Oil subsidiary, Mene Grande Oil Co., is developing the Officini field and is building a 100-mile pipeline from the field to a terminal on the Caribbean Sea which is to be completed in the fall. Normal movement through this line is anticipated as 50,000 barrels daily but it is understood it could run 90,000 barrels were the crude available.

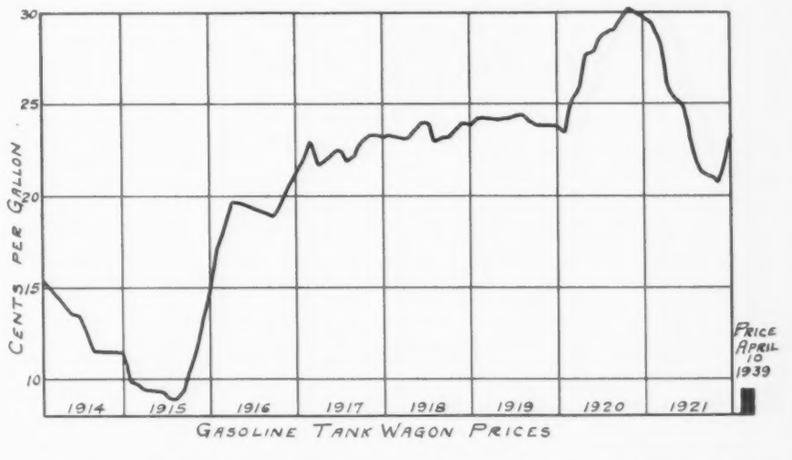
IN COLOMBIA, the 12-inch pipeline of the joint Texaco-Socony Vacuum interests, extending 260 miles from the Barco Concession to Covenas on the Caribbean, is soon to be completed and it is planned to move 25,000 to 30,000 barrels a day through this line. The line could carry double that amount of oil. It is understood that the line of the Standard of New Jersey interests in Colombia, now moving about 30,000 barrels a day could handle about twice that amount of crude. It is possible that within a few months at least, about 150,000 barrels more of crude a day would be available from these two South American countries at seaboard terminals. This would cut down to 210,000 barrels, or 615,000 barrels—depending on which basis for war time needs is used—the additional amount of crude necessary to be supplied from the U. S., still assuming that England and France were unable to secure oil supplies from any fields except this side of the Atlantic.

What portion of this increased amount of crude the refining industry in this country might be called upon to process is another matter of conjecture.

Two of the largest refining plants in the world are in the Dutch West Indies, just off the coast of Venezuela, the plant of the Standard of New Jersey, with a capacity of over 300,000 barrels a day, located on a small island of Aruba, and the plant of the Shell interests on the nearby island of Curacao, with a capacity of about 250,000 barrels a day. Both these plants are reported by some authorities to be running at about capacity now. Other refining plants in the South American countries are small. The Standard of New Jersey is building a 10,000-barrel plant in Venezuela. Unless the plants at Aruba and Curacao could increase their output of refined products materially the job of refining the additional amount of crude for wartime needs would fall principally on this country, it is likely, unless England and France made greater use of their own refining facilities.

These two countries combined have about 200,000 barrels daily refining capacity. In 1938 they receive crude from the U. S. at the rate of 46,000 barrels a day, which would leave them 155,000 barrels daily refining capacity which might be used unless these refiners were put out of commission by war operations. To the extent that these refining facilities in England and France could be used they would cut down the additional demands on refineries in the U. S. Canada also has been building up its refining capacity in recent years and has nearly 200,000 barrels daily capacity now. Canada's crude supply is not sufficient for its own needs, however, and it is likely, in the light of its experience during the World War, that its plants would be fully engaged in meeting the stimulated domestic

Gasoline Tank Wagon Prices During the 1914-18 War



Above are average tank wagon gasoline prices for groups of from 25 cities and more as published in NATIONAL PETROLEUM NEWS during this period, supplemented with prices from other sources. The low price in 1914 and 1915 was the result of the growing output of the Cushing, Okla., field and the low price for Mid-Continent crude. The oil industry Petroleum War Service Committee held tank wagon and retail prices steady after this country got into the war. Included in the prices shown are the state gasoline taxes, which started in Oregon in March, 1919 and by 1921 averaged 2.8 cents in the retail price of gasoline. The average tax in today's price is 5.4 cents

demand there in the event of war. In 1937 they were operating at two-thirds capacity.

This discussion thus far has considered only the increased war time demand from the European nations actually engaged in military operations. Some idea of the large growth in domestic consumption of oil in this country during the World War can be gained by comparing the figures for crude consumption during the war years 1914 through 1918. Indicated domestic consumption of crude oil in 1914 was 207,959,000 barrels and by 1918 it had increased to 347,639,000 barrels, an increase of 67 per cent. During the war period, the U. S. export trade gained from 47,376,000 barrels in 1914 to 64,634,000 barrels in 1918, a gain of only 23 per cent but exclusive of much of oil exported for our own army needs.

FROM all indications, the gain in export trade in a war today would be far greater than in the war of 1914 to 1918. The entire world, commercial as well as military, was just entering the automotive era then. It was little realized when that war broke out to what extent armies would use petroleum supplies and the navies of the world were just going from coal to fuel oil. A good share of the shipments of oil supplies to the U. S. armed forces abroad did not show up in the export trade figures. Again, the Mexican oil fields began to show a tremendous growth in production starting about 1914 and by 1918 production from that country had increased 38,000,000 barrels above its 1914 output, some 18,000,000 barrels of this output going to England and France and offsetting what would otherwise have been a demand on this country for that amount of oil. So, a 23 per cent gain in U. S. exports in the last war is misleading as an indication of how much greater the export trade of the U. S. would be in case of war today.

On the other hand, an increase of 67 per cent in the consumption of petroleum and its products in this country alone is also unlikely. An increase of that extent, on the basis of the U. S. consumption in 1938, which was 1,134,000,000 barrels, would in itself amount to 760,000,000 barrels a year.

In the U. S. in the war years, automobiles first came into common use. There were 1,711,339 cars registered here in 1914 and by 1918 there were 6,146,617 cars registered, an increase of nearly 260 per cent. Steel production increased from 23,513,000 gross tons in 1914 to 44,462,000 gross tons in 1918, a gain of 88 per cent. The railroads' revenue increased from $241,608,000 in 1914 to $410,549,000 in 1918, a gain of 70 per cent.

HOWEVER, assuming a much less increase in domestic demand for petroleum and its products in any current period because of the extent to which the automotive engine has already been adapted into industrial and social life today, and assuming an increase in export trade based on only twice the normal consumption of France and England, it can be seen where total demand for the petroleum supply in the U. S. might increase to something like the 800,000 barrels daily estimated in the recent report made to the President by the Energy Resources Committee of the National Resources Committee in January. The National Resources Committee is made up, among others, of the Secretaries of the Interior, War, Agriculture, Commerce, Labor and the Works Progress Administrator. Said the technical authorities on the Energy Resources Committee on this point of wartime demand for U. S. petroleum supplies:

"Not only are petroleum prod-

Ownership in Oil Fields Outside the U. S.

Ownership of oil properties according to nationalities is given as available from general statistics, which in some cases is not up to date by a few years, however:

Roumania—British-Dutch, 36 per cent; Roumanian, 26 per cent; French, 16 per cent, American, 10 per cent.

Iraq — American, French, British, British-Dutch each 23¾ per cent.

Iran—Entirely British, through Anglo-Iranian oil company.

Netherlands India — British-Dutch, American.

Venezuela—American, British-Dutch.

Colombia—Entirely American at present.

Peru—Principally American, some British, Peruvian government.

Argentina—Argentina government, British-Dutch, American, British.

Consumption of Petroleum Products for Military Purposes, by Countries, in 1937

(From data prepared by V. R. Garfias, R. V. Whetsel and J. W. Ristori of Cities Service Co., New York)

Country	Number In Standing Army	Navy Tonnage	Number Planes	Motor Fuel Bbls.	Gas and Fuel Oil Bbls.	Lubricants Bbls.	Total Oil Consumption Bbls.
Argentina	37,000	100,000	175	58,700	742,000	3,900	804,600
Austria	38,000	.....	.....	10,700	.....	300	11,000
Belgium	92,000	.....	225	83,500	.....	2,700	86,200
Brazil	66,000	59,000	75	32,900	439,000	2,200	474,100
British Empire	385,000	1,256,000	4,800	1,637,000	10,526,000	81,800	12,244,800
Bulgaria	44,000	.....	.....	5,400	.....	200	5,600
China	1,750,000	52,000	250	75,400	400,000	3,500	478,900
Czechoslovakia	164,000	.....	.....	26,900	.....	800	27,700
Finland	30,000	15,000	.....	5,400	116,000	500	121,900
France	659,000	516,000	4,700	1,578,000	4,600,000	64,000	6,242,000
Germany	650,000	135,000	4,500	1,403,000	1,000,000	47,600	6,450,600
Greece	80,000	37,000	150	57,000	275,000	2,500	334,500
Hungary	44,000	.....	.....	10,700	.....	300	11,000
Italy	1,332,000	425,000	4,500	1,559,000	3,465,000	60,000	5,084,000
Japan	600,000	813,000	3,000	1,077,000	6,200,000	51,800	5,328,000
Mexico	57,000	.....	.....	10,700	.....	300	11,000
Poland	333,000	.....	400	219,000	.....	6,600	225,600
Portugal	61,000	26,000	.....	17,200	200,000	1,100	218,300
Roumania	222,000	.....	1,000	345,500	.....	10,800	356,300
Russia	1,545,000	193,000	4,500	1,575,000	1,498,000	55,000	3,128,000
Spain	500,000	100,000	500	482,000	742,000	17,600	1,241,600
Sweden	34,000	85,000	300	115,700	630,000	4,700	750,400
Turkey	133,000	44,000	400	138,900	320,000	5,300	464,200
Yugoslavia	132,000	.....	.....	26,900	.....	800	27,700
U. S.	170,000	1,146,000	3,400	1,188,000	9,210,000	61,800	10,459,800
Others	220,000	384,000	665	402,000	4,936,000*	1,900	5,357,000
Total	9,378,000	5,386,000	33,540	12,141,500	45,299,000	505,100	57,945,600

* Includes 2,240,000 barrels of fuel oil consumed by armies of countries shown on which no segregation by countries was made.

Down and up

The threat of stored gasoline overhanging the market today is less by 6 million barrels than it was a year ago

On February 18, 1939, gasoline stocks were 83 million barrels—

On February 18, 1938, they were 89 million barrels, the American Petroleum Institute reports

And motorists are burning more gasoline this year than last

Stocks lower, consumption higher—that's a pretty picture for the Dubbs refiner

He makes the kind of gasoline the motorists want

And he doesn't have to run too much crude or make too much fuel oil doing it

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Indicative of the feverish activity that marked the United States' efforts to "catch up" after its entrance into the World War was the building of a "bridge of ships to France." Pictured here are some of the ships which were constructed 1917-18 at Bremerton Yards, Washington

ucts essential to the Army and Navy but it is also true that manufacturing and transportation facilities, vital to the Army and Navy, are dependent for their continued operation upon petroleum.

"It has been estimated, for example, that, during a national emergency, the demand for petroleum would increase by one-fourth. At the present rate of consumption, this increase would amount to about 800,000 barrels a day."

What might happen to the refining industry in this country were it called upon, even quite suddenly, to meet an increased demand for refined products of several hundred thousand barrels a day?

TOTAL refining capacity in the U. S. is placed at various figures from 4,000,000 to 4,200,000 barrels daily, the total depending on the extent to which each estimate includes obsolete plants and obsolete equipment at operating plants. By the April 1st report of the American Petroleum Institute, the refining industry was operating at 77.1 per cent of rated capacity and running 3,170,000 barrels of crude a day. This rate of production was not quite sufficient to take care of current market demands, since gasoline stocks were drawn on for the last week in March by a moderate amount and gas and fuel oil stocks were cut by more than a million barrels. Running at capacity, the country's refineries on the institute's basis of reporting probably could run a little better than 1,000,000 barrels of additional crude a day to their stills. It is likely that, in the case of necessity, this could even be increased. Skimming plants now shut down entirely might be operated to top crude oil and their cut of fuel oil sent to other plants to crack into additional gasoline or into lighter fuel oils if needed.

It seems probable that, in the event of a greatly increased war demand for oil products, this demand would be met by Gulf Coast and East Coast plants, since their refined products could be loaded direct into tankers and railroad shipments avoided entirely in the case of most plants. Still fresh in the minds of oil company executives who directed company affairs during the last war is the difficulty they encountered in getting the railroads to move their products then, even though oil was on a priority shipping list.

Then the vast Gulf Coast refining industry did not exist and the output of the East Coast plants was not enough to allow the stimulated export demand to be met, particularly for gasoline. Out in the Mid-Continent, however, were many new refining plants and crude oil fields nearby to supply their needs. The difficulty was in moving the refined oil to seaboard and this problem was solved largely through the suggestion from the oil industry that the railroads make up solid trainloads of gasoline in the Mid-Continent and move them to the East Coast at express schedule, without breaking the trains at any point en route.

At present, however, the oil industry has a total refining capacity on the Gulf Coast of 1,156,850 barrels daily, mostly served by pipeline from the oil fields of the southwest. These refineries as of April 1 were operating at a little better than 1,000,000 barrels a day, far in excess of the demands of the section of the country in which they are located. With low-cost water transportation available, they ship to many points along the entire East Coast and up the Mississippi River system. In the event of a large war demand, it is possible that this refining district would be given over almost entirely to export trade. This would mean reallocation of domestic business among other refining districts.

For example, the East Coast refining district has a total rated capacity of 620,000 barrels a day. The domestic trade territory it could naturally serve includes New England and down the coast through Virginia, and including only the eastern half of the states of Pennsylvania, New York and Virginia. On the basis of current gasoline consumption, these states use a little better than 300,000 barrels of gasoline a day. On the basis of a 50 per cent yield of gasoline from crude run to stills, this district could about meet the needs for gasoline at least of this very thickly populated district of the country, without calling on the Gulf Coast.

At present these East Coast refineries receive the principal part of their crude supply by tanker shipments from the Gulf Coast crude shipping terminals and from crude imported from the South American fields. However, in the event of necessity, it is possible that these plants could receive the largest portion of their necessary crude supplies through the industry's own pipeline transportation system and release the tankers that now serve them for other uses and still not put demands upon the railroads' facilities. While the industry now moves no crude direct by pipeline from the Mid-Continent to the eastern seaboard as it used to do through the original Standard Oil pipeline system, the pipeline facilities to move both crude and gasoline throughout this entire territory have been greatly augmented.

THERE are now three crude lines crossing Ohio which carried a total of 106,000,000 barrels of crude in 1937, at the rate of nearly 300,000 barrels a day. Available as far as Chicago are four crude lines and one gasoline line and at the eastern side of Ohio are three crude lines and three gasoline lines which latter now carry gasoline into the interior from the East Coast. It seems possible that a hooking up of the existing lines and the building of a small amount of connecting line at certain points, in the event of necessity, could furnish the East Coast refineries their crude supplies.

In addition to these pipeline facilities in an emergency, the oil industry has built up its own system for mov-

NPN acknowledges the assistance of Paul L. Hopper of Washington, petroleum expert of the U. S. Department of Commerce, in the selection and compilation of the statistics on which the accompanying article is based.

ing crude oil and refined products by water, which could be of much greater service in the event of necessity. Crude oil produced in the southwest could be moved by barges up the Mississippi and Ohio rivers to Pittsburgh where pipeline connections could be made to move it to the coast. Tankers on the Great Lakes could move oil from pipeline terminals at Chicago or Toledo through the New York barge canal to the East Coast.

The capacity of the barge movement of oil on the Mississippi can best be judged by the fact that in 1937 approximately 110,000,000 barrels of all products moved on the Mississippi and its tributaries, an average daily movement of 330,000 barrels. Most of these hauls were for shorter distances than from the Gulf Coast to Pittsburgh, however. Movement of oil by tanker and barge on the Great Lakes in 1937 was 70,000,000 barrels, a daily average movement of 190,000 barrels. These figures give an idea of the extent to which the oil industry, in the transportation of its products, today operates independently of the railroads.

ANOTHER link in the oil industry's own transportation system which could be used effectively to avoid calling on the railroads' facilities and which is also capable of being expanded on short notice, is its transport tank trucks. During the last war, when a railroad strike was threatened by the railroad brotherhoods in their demand for increased pay, there was planning among the oil companies as to how the trucks they then owned could be used to transport gasoline from refineries and bulk plants to centers of consumption. The point was made then that tank trucks could travel as far as 50 or 60 miles a day with a load of gasoline. Today trucks carry much larger volumes at a load and travel 200 miles or more and return to their supply depot in a 24-hour day. Operated in conjunction with tankers and barges, trucks could serve a great proportion of the nation's population without rail service being used at all. Figures are not available as to the number of tank trucks now in use by oil companies. Three years ago, 50,000 tank trucks were owned by 40 large oil companies and an estimated 70,000 more were used by independent oil distributing companies over the country and this total has grown since.

The importance, in any emergency, of the oil industry's own transportation system of pipelines, tankers and barges and trucks is shown by the fact that there are now only about 150,000 tank cars operating on the railroads, while in the last war there were 80,000 tank cars. Our present consumption of petroleum is at the rate of over 1,000,000,000 barrels a year, about three times what it was in 1916.

As far as actual refinery processing is concerned, authorities believe that little if any change from present practice would be necessary to supply the types of fuels and lubricants for motor transport and mechanized combat and supply equipment. Aviation fuels of 100 octane number and higher would be in much greater demand but could be produced in a relatively short time through supplementary cracking units to existing refineries, it is stated. At a recent meeting of the American Chemical Society in Baltimore it was brought out that new plants soon to go into operation will be capable of producing over 4,000,000 barrels of 100 octane gasoline a year and that foreign plants will have a capacity of over 3,000,000 barrels.

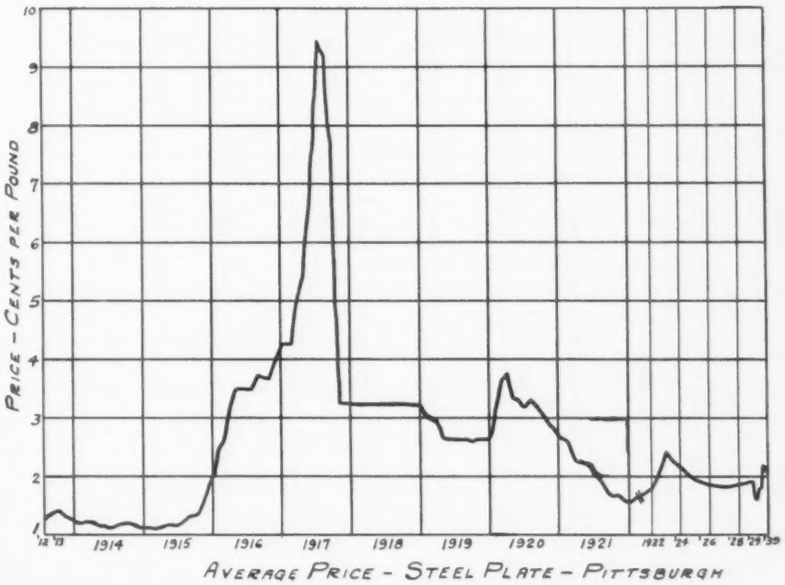
Catalytic cracking processes such as the Houdry have already supplied several million gallons of aviation fuels and could supply several times that quantity on short notice, it is said. The eight or ten polymerization-hydrogenation process units now operating in this country can supply many times the present peacetime demand for this fuel without building a single new unit, it is said. Polymerization plants, of which about 40 are operating throughout the world most of them in this country, could be connected with hydrogenation units built in a short time to produce the super aviation fuels.

The new process of alkylation, just now getting into its stride, is said to simplify the production of these important aviation fuels by accomplishing in one step what requires two steps in the polymerization-hydrogenation process. When combined with dehydrogenation by catalysts, or when operated on selected refinery gases, this process is said to offer suitable methods for making large quantities of the super aviation fuels at low cost. The necessary equipment is neither expensive nor extensive and units can be erected and started in operation quickly.

Another important point in this discussion of the increased demand for petroleum supplies in the U. S., in the event of an European war, is the probable allocation of the additional crude needs among the producing fields and whether or not any great amount of new drilling would be necessary to insure maintaining the supply needed.

In spite of the tremendous increase in the demand for crude oil which has taken place in this country since the World War, its crude oil producing

Soaring Steel Prices Raised Costs Of Oil Industry in World War



Long before the U. S. got into the war in 1917, the demand for steel for war materials and for the needs of rapidly expanding business in this country, caused great increases in prices for plate and tubular goods. Supplies were hard to get even at the high prices. Oil companies had difficulty obtaining tanks, drilling and refinery equipment. At one time producers were asked not to drill wildcat wells but to conserve the use of equipment by drilling only proven locations. The chart shows what happened to the price of steel plate in 1916 and 1917 particularly. The drop in 1917 was after Congress had passed regulatory laws providing for price stabilization and priority among customers based on essential war needs, of which oil was an important one

fields are in better shape to take care of any estimated increase, through war demand, than back in 1914. When war broke out then the Cushing field in Oklahoma was the principal new producing territory. Its production reached 300,000 barrels daily and then fell back to 100,000 barrels. For its crude oil needs in the latter years of the war, this country depended on importing crude from Mexico, where crude output was growing fast.

This country now has known oil reserves in the ground of 17,000,000,000 barrels, the largest in its history. The extent of these reserves in the present developed fields is such that it is believed that any increased amount of crude needed through war demands could be taken from the ground without the necessity of drilling more than a normal number of wells.

It is likely that a good share of the additional crude needed in the event of war today would come from the southwest, Texas particularly. The lifting of the Sunday shutdowns in Texas fields which are now part of the proration program, could increase production in this state by about 275,000 barrels daily, it is estimated. There are 90,000 producing wells in Texas now and an additional 100,000 barrels over that gained by eliminating Sunday shutdowns could be achieved by allowing each well to produce only a little over one barrel of oil more a day.

The big East Texas field, with 26,000 wells, is now held in actual production to 2.32 per cent of its potential flow and is producing at the rate of about 450,000 barrels daily at present. Many operators believe that this field alone could produce from 1,500,000 to 2,000,000 daily for several years. This field also has pipeline capacity to the Gulf Coast of 900,000 barrels daily and is producing only half that amount now.

Kansas has a potential oil production of 3,000,000 barrels daily and is now operating at 150,000 barrels daily. Operators say an additional 100,000 barrels could be secured here easily but it would take a little time to get the necessary connection to move this oil to refineries. Oil fields in New Mexico could easily make an additional 100,000 barrels daily if there were a market available and some looping of lines might be necessary to make this additional volume available to markets but no new lines would have to be built. Oklahoma's production could be increased by a moderate amount, say 50,000 barrels daily, operators say.

These increases listed above make a total of about 600,000 barrels daily of increased production which could come from the southwest. Outside this area is the new Illinois field with its output at 200,000 barrels daily and likely to increase in coming months.

At the end of 1938 California had 18,850 producing wells, with a potential for allocation purposes of nearly 2,000,000 barrels daily and capacity to produce without waste 1,400,000 barrels. Its average production is now about 630,000 barrels a day. A great volume of increased production from the fields in this state is available at any time. Prices would have to be such, however, as to make it possible to bring the oil through the Panama Canal to the Gulf or East Coast.

World War Brought Shortage Of 'Gas'; Supplies Ample Now

Data on the domestic consumption of oil products was not available during the years of the World War from 1914 to 1918 and through this lack of any published figures on consumption of oil products in this country, it was not generally recognized, long before this country entered the war, the extent to which domestic production was increasing. This factor came much closer to throwing the industry's operations out of line than did the shift in the export trade, which was anticipated when the war started.

There were periods when the oil jobbers, who were increasing in numbers very fast in this period, had difficulty in getting gasoline supplies from their refiners for their current needs. The tank wagon price went up, sometimes by three or four cents in a few weeks. Congress ordered the Department of the Interior to investigate the cause for the rapid advance in the price of gasoline to the public. The then Secretary of the Interior, Franklin K. Lane reported in February, 1916, that gasoline consumption in this country was growing at a rapid rate and would continue to do so. He said a 25 per cent gain could be expected in 1916 over 1915.

Oil men who follow the export markets do not anticipate a lag in the pickup in demand, if hostilities break out now, similar to that which occurred when England and France went to war with Germany in 1914. One reason they give for this statement is that all the European nations have been preparing for war and are largely on a war basis now, with their demands for oil products carefully estimated, if military operations actually start. Most people in this country would be greatly surprised, people in Washington say, if they knew how many industrial plants in this country are already at work on war supplies and munitions, both for this country and for other nations.

Until fighting actually broke out in 1914, few people even in the nations involved really believed there would be a general war. There had been no period of military preparation, except in Germany, and few people realized the extent in that war to which oil supplies would be used in military operations. The nations involved had to adjust themselves entirely to a war basis.

In 1914 the export trade of this country was to a great extent in kerosine, illuminating oil it was called then. In 1913 the U. S. shipped 26,650,000 barrels of this product abroad; as against 4,500,000 barrels of gasoline—or naphtha as it was called then; and a little over 10,000,000 barrels of fuel oils, known then as residuum. Lubricants then were a most important part of our export trade, the volume being almost 5,000,000 barrels in 1913. The value of the kerosine export trade in 1913 was $72,000,000, as against $29,000,000 for lubricants, next in value.

The export trade in kerosine at that time was also of great importance to this country because it took from the refineries here a product which would otherwise have been a drug on the market. Motor cars were beginning to be used in numbers here and there were no cracking processes available at that time, so a great volume of kerosine and fuel oil had to be made to supply from crude oil, the gasoline that was in market demand. The export trade had taken care of a great part of the surplus of these two commodities.

Another factor that served to dislocate our export trade in 1914 was the fact that a great many of the 360 tankers then in service were under German registry, even a good many of the tankers owned by oil companies in the country. It was some time before those tankers could be transferred to American registry and put in service again. Even under these conditions which do not exist today, the export trade quickly adjusted itself to the new war conditions. Heads of oil companies in the east, by the end of 1914, were taking back what they had said a few months before about the dire consequences to the oil industry in this country of the outbreak of war in Europe. The Department of the Interior said, in commenting on the oil industry for 1914:

"The outbreak of the European war temporarily demoralized the export situation by cutting off certain of the foreign consumers as well as diminishing the supply of available tankers, and although the situation remedied itself to a great extent before the end of the year because of the increasing demands for petroleum products from other consumers and of the transfer to American registry of a great number of oil tankers, the remaining five months of 1914 recorded a decline of about 13.5 per cent in quantity and 13 per cent in declared value of petroleum exports, compared with the corresponding period in 1913."

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Oil Left Free To Govern Itself During World War

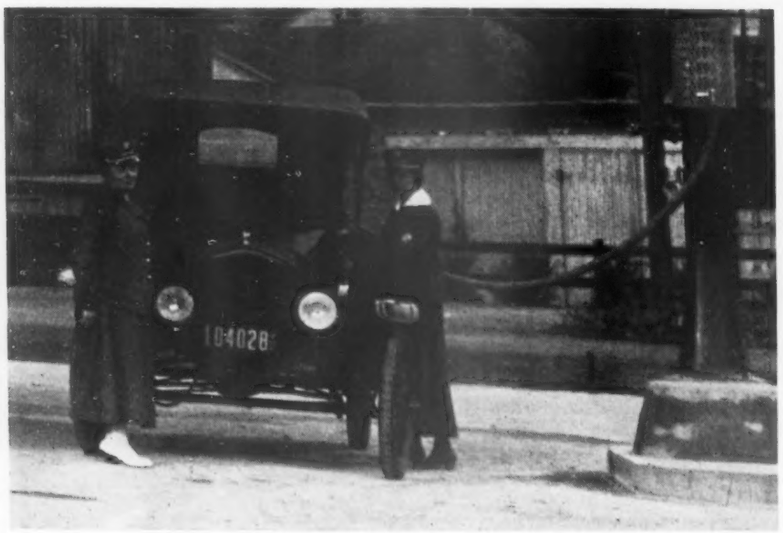
OIL, like all industries, was put under regulation by Congress when this country entered the last war in 1917. However, leading oil men said that the industry would provide all the petroleum products needed at fair prices and proceeded to prove that they could do it, so that the government's "control" of oil was never more than advisory, a record for which the industry received much praise by public officials at the close of the war.

But the aim of Congress in seeking the regulation of industry 22 years ago was not social reform as in recent years, but in order to permit industries to properly serve the government in prosecution of the war, to help government and private enterprises from needlessly bidding against each other for war and civilian materials and supplies, and to help business to produce and ship those products that were most needed first.

The first regulatory law, known as "the food bill," applied to food products and fuels and was aimed to stop profiteering in these two essential commodities. Here fuel oil was the only oil product included. Under the Lever bill passed a few months later, all industries were brought under government regulation and licensing of businesses and price fixing was provided for. Under a railroad priority bill, the President also had the power to control the shipments by the railroads of all commodities.

While the oil industry was subject to all these regulatory measures, it carried out the administration of the measure itself through a system of committees, at first informally, and later officially recognized by the U. S. Fuel Administration. There was talk at times of the oil industry being taken over by the government and its prices arbitrarily fixed but these never materialized. The industry set its own quotas, fixed its own prices and, when the railroads bogged down hopelessly under the volume of shipments and numerous priority orders, the oil companies set up their own organization to expedite rail shipments of petroleum products.

The most dramatic move in this direction was the arranging for solid trainloads of gasoline to move from the Mid-Continent refineries at express train schedule, to the eastern seaboard. This suggestion came from a group of Mid-Continent refiners who had gasoline in their storage tanks while thousands of tank cars both loaded and empty were scattered in railroad yards all over the country, and ocean tankers were waiting at Eastern seaports to load. Whole trains of tank cars would actually be "lost" for days. The solution the oil men had suggested was simple enough; namely that all oil trains for export be handled as solid trains, without break-up enroute and with stops only to change engines and crews and that solid trains of empties be returned the same way. With the aid of the government's Railroad Administration that had taken charge of the railroads' operations during the war, this new handling of freight trains was enforced with the result that all of the industry's tank cars were rolling all the time.



A shortage of manpower for service stations developed during the World War both through enlistments and through men being needed in plants working on essential war needs; so many oil companies hired women to operate their stations. This photograph was taken at a Sinclair station in Cleveland in 1917

ANOTHER dramatic episode in the war in which the oil industry had a principal role was the making effective of the "gasolineless" Sundays east of the Mississippi. In the late summer of 1918 it became apparent that the increasing gasoline demand in this country and the larger export demand extensive military operations started, was more than current refinery production was able to meet. The heads of the oil industry's war time service committee had suggested that gasoline be conserved in driving in this country, but it was felt that some dramatic appeal was needed.

So the government issued an appeal to the public to refrain from driving its motor cars on Sunday, starting Aug. 28. Only physicians' cars and a very few other necessary services were exempt. The oil companies refused to sell gasoline at their stations unless extreme need were shown. The public responded to such an extent that doctors took great care to see that signs were on their cars, to avoid public displeasure when their cars were seen on the road on Sunday. It was estimated 5,000,000 gallons of gasoline was saved on each Sunday.

That the oil industry was so successful in co-ordinating its efforts with the government needs and in exercising self-rule in the face of the strict government regulations under which many industries were operating was due largely to the policies of the two men at the head of its wartime program. Throughout their work, they let suggestions as to policies as to operations, refinery quotas and prices come up

from the producers and the refiners in the field, rather than being arbitrarily imposed from the top down. As a result they secured sound policies and the entire co-operation of the industry itself.

The chairman of the oil industry's wartime organization, known as the Petroleum War Service Committee, was A. C. Bedford, president of the Standard Oil Co. of New Jersey. This grew into a nation-wide organization of committees from all branches of the industry and from all geographical districts.

At the head of the government's agency for administering the oil industry during the war was Mark L. Requa, a western mining engineer with petroleum experience. He was named head of the oil division of the fuel administration by Dr. Harry A. Garfield, U. S. Fuel Administrator. Requa announced at the outset that he wanted the oil industry to govern its own operations, that it would be given every chance, and that government control in fact would come only if the industry failed.

The Petroleum War Service Committee had many activities. It had to allocate the needs of the war and navy departments to the different refining districts and even to refineries in such a way as to get the needed products in the shortest time with the easiest haul to the seaport best able to handle the tankers. This had to be done with regard to price, the demands on individual refineries for domestic needs and the prospective supply of new crude which was coming in from new fields.

The committee also had to arrange for the necessary oil field supplies to carry on a vast drilling campaign, and that was no small job as the new fields caught the small single line railroads by surprise and much needed oil field equipment backed up for hundreds of miles. The committee also had to get the necessary new and additional refinery equipment pushed through the steel mills ahead of munitions orders.

Above all, the industry's leaders had to reconcile all sorts of conflicting company positions and individual opinions, both in industry and government, so as to get all this done without having to "crack the whip" of government control, lest the control would never be given up. To accomplish this Chairman Bedford visited the oil country and talked to the different groups. He also invited different oil men to attend meetings as guests in order to see just what was going on. The committee had to operate under an oath of secrecy from the government because of the military secrets entrusted to it yet it could only accomplish results through its "public relations" contacts. This was a vastly different situation from that obtaining during the late code days.

When Requa became Oil Administrator in January of 1918, Fuel Administrator Garfield was talking of "taking over" the oil industry. Requa advised against it. The Petroleum War Service Committee was enlarged, district committees were set up and close co-ordination with Requa's office maintained.

Early in February the manufacture and distribution of fuel oil was placed under closer government supervision. All firms making more than 100,000 barrels a year of this product had to secure licenses and follow priority orders in supplying customers. Shortly afterward, a pooling arrangement on all fuel oil was worked out, to insure that vital industries were supplied.

Because of the high prices for steel tankage and drilling supplies Mid-Continent producers had asked for higher crude prices and the price had been advanced to $2.25 a barrel early in 1918. Then Requa said there were to be no further advances but refiners, in need of oil for their stills, were paying premiums. So in July the price of Mid-Continent crude was officially fixed at $2.25 and premiums were forbidden. Refiner's prices for products were held at levels suggested by the oil committees and tank wagon prices were also stabilized during the summer. On Oct. 1, shortly before the end of the war, government licensing was extended to all oil companies except producers and retailers whose business was less than 100,000 gallons a year. Before that only fuel oil distributors had been licensed.

An active member of the oil industry in its wartime activities in 1917 and 1918 was T. A. O'Donnell, a California producer, who visited the oil fields of the country and talked to groups of producers, urging them to greater efforts to increase their crude output. O'Donnell was later president of the American Petroleum Institute and still looks after his production interests in California.

Of the seven members of the petroleum industry's war committee which was organized when this country entered the war, two are still active today:

J. W. Van Dyke, then president of the Atlantic Refining Co., Philadelphia, now chairman of the board of that company.

Harry F. Sinclair, then president of the Sinclair Oil & Refining Corp., now chairman of the Consolidated Oil Corp., New York, the parent company of the various Sinclair oil interests.

Later, when the Petroleum War Service Committee, was formally set up, its membership was increased to 30 and among its members who are still active in the oil industry today are:

J. Howard Pew of Philadelphia, then president of the Sun Oil Co., who still heads this company.

W. S. Farish, then a producer on the Gulf Coast, now president of the Standard Oil Co. of New Jersey.

Samuel Messer, then president of the Emlenton Refining Co., Emlenton, Pa. He is now vice-president of the Quaker State Oil Refining Corp., Oil City, Pa., which acquired the Emlenton company some years ago.

Walter C. Teagle, then president of the Standard Oil Co. of New Jersey, now chairman of its board.

Henry L. Doherty, of New York, still president of the Cities Service Co.

J. S. Cosden, then president of Cosden & Co., Tulsa, who has been operating a refinery in the East Texas field.

A. G. Maguire, now chairman of the board and president of the Wadhams Oil Co. of Milwaukee of the Socony-Vacuum interests, was director of jobbers and licenses of the Oil Division of the U. S. Fuel Administration.

James A. Moffett, now chairman of the board of the California Texas Oil Co., Ltd., Los Angeles, was secretary of the Petroleum War Service Committee.

C. G. Sheffield of New York, vice president of the Standard Oil Co. of New Jersey, then connected with the same interests, had an active part for the committee, in allocating fuel oil deliveries.

New England Oil Men Reorganize Association

BOSTON—Fred E. Bergfors, Quincy Oil Co., Quincy, Mass., has been elected president of the Independent Oil Men's Association of New England, which has been re-organized into a social group, to include representatives of major oil companies and allied businesses as well as independent oil men.

Other officers elected were Albert T. McGrath, Firestone Tire & Rubber Co., Boston, vice-president; Warren S. Keith, Keith Oil Co., Brockton, Mass., treasurer; Paul S. Strang, Community Service Stations, Inc., Newton, Mass., secretary.

Directors elected were P. A. Brewer, Brewer Petroleum Co., Sommerville, Mass., F. B. Smith, Massachusetts Wharf Coal Co., Boston, and A. L. Brown, A. L. Brown Co., Malden, Mass.

The New England group formerly operated as an independent association with voting powers limited to independent members, and major companies and allied businesses holding associate membership.

Future meetings of the association will be held the second Wednesday of each month at some golf club near Boston, according to President Bergfors.

He said that it was the consensus of the membership who have attended meetings during the past winter that under present conditions the association could serve best as a social organization.

Hubert B. Fuller

The Legal Protection Of Station Equipment

By Hubert B. Fuller*

A chief consideration with loaned or leased equipment at service stations is for the jobber to protect his title to the equipment against mortgages obtained by others on the building and real estate. He also must know his legal rights where mortgages are taken out after his equipment is installed.

In this article, written exclusively for NATIONAL PETROLEUM NEWS, Hubert B. Fuller of Cleveland, general counsel for the Ohio Petroleum Marketers Association, describes the form of equipment lease the jobber should use for his own protection, and the necessity for his determining, before the equipment is installed, as to existing mortgages. He also discusses recent court rulings which might apply to claims by future mortgage holders on such equipment as underground tanks.

IN VIEW of the very considerable amount of equipment installed by jobbers and distributing companies upon real estate owned by others, it is important that every possible precaution be taken against such equipment being subjected to claims of third parties and particularly against any liens which may be asserted against the premises by existing or subsequent mortgage holders.

Since jobbers frequently rent from land owners properties improved with suitable filling station buildings and then install upon the premises such items of equipment as underground storage tanks, gasoline pumps, lubsters, air compressors, etc., this question assumes an increasing importance. These include not only those stations operated directly by the jobber but also the much larger number which are subleased to lessee operators.

In addition to articles thus installed at outlets of this type, we have the very considerable amount of equipment leased or loaned to purely dealer outlets. In many of these dealer outlets, title to the equipment may have changed hands a number of times since its original installation—in fact every time the dealer has changed his source of supply.

Let me point out briefly the principles involved and the precautions which should be taken by jobbers contemplating the installation of equipment on property owned by other persons or in purchasing equipment owned by another distributor and already located upon such premises.

First of all, it is important that, when equipment is installed upon premises owned by another, a written instrument be drafted and signed by the interested parties setting forth exactly the items of equipment which are being placed upon the premises and the conditions governing such installation. Such an instrument is generally referred to as an Equipment Lease. This lease should contain the name of the jobber making the installation or buying the equipment installed by a prior distributor and should set forth with absolute accuracy the name of the dealer operating the outlet. It should also contain a reasonably accurate, but not necessarily technical, description of the property upon which the equipment is to be located.

The Equipment Lease should also set out the exact conditions under which the various articles are leased or loaned to the dealer and specifically that they should be used only for storing and dispensing the products of the owner or lessor of the equipment. The instrument should also state clearly that the dealer recognizes the title of the jobber to the equipment and should specify that he shall have the right to remove the equipment at any time the dealer ceases to handle the products marketed by such jobber.

The lease should accurately list and identify the articles of equipment covered by it — for instance, gasoline pumps should be referred to by the name of the maker, the model number and the serial number. The lease should provide that it shall cover not only the equipment thus listed but shall also cover any addition thereto or substitutions therefor. There should be appended to the lease a provision which we may call "Owner's and Mortgagee's Consent." This may be only a sentence, which may read something as follows:

"The undersigned owner and the undersigned mortgagee of the premises described in the foregoing lease, as a consideration for the installation upon said premises of the equipment therein described, hereby authorize the lessor of such equipment to install upon said premises the above described articles of equipment and any addi-

*General counsel for Ohio Petroleum Marketers Ass'n. and member of Cull, Fuller & Laughlin, Cleveland law firm.

How

A MEETING IN 1914 helps you get your money's worth in advertising space TODAY

IF you bought advertising space thirty years ago, you will remember how hard it was . . . how frequently impossible—to get information on circulation needed for effective space buying.

In 1914 a group of clear-headed men, tired of deploring the situation, resolved to do something about it. Their meeting resulted in the formation of one of the most remarkable examples of an industry's self-control—the Audit Bureau of Circulations.

Today, A.B.C. reports reveal and analyze NET PAID CIRCULATION—the true measure of advertising value.

A.B.C. reports answer the three vital circulation questions: how much is there? where is it? how was it secured? A.B.C. reports give verified information on the *quantity,* and an important index of the *quality* of circulation.

Before you buy space in any publication, study the A.B.C. report carefully. Know what you're getting. Then buy—and get what you pay for.

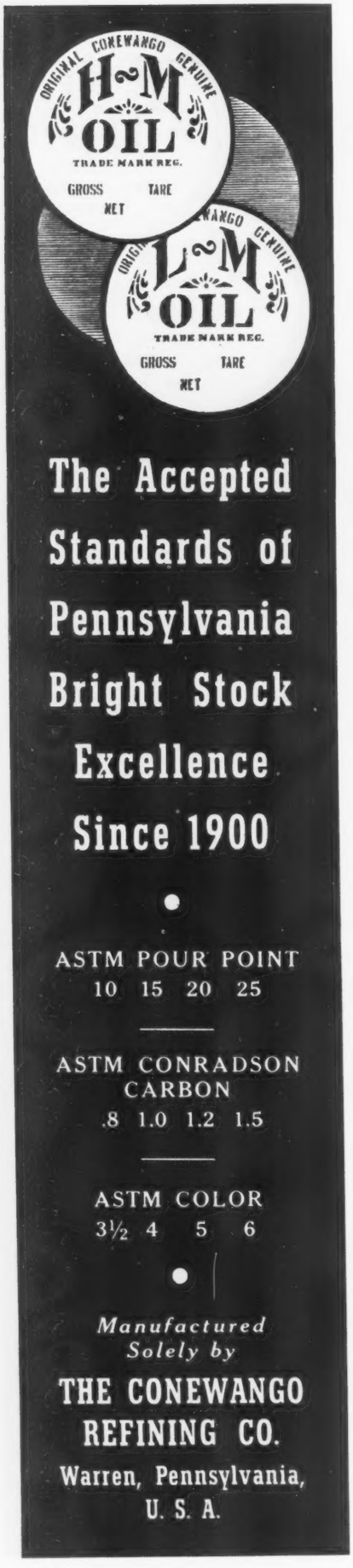
• • •

Ask for a copy of our latest A.B.C. report. It will give you quickly and completely the facts you want to know about the circulation of this paper.

National Petroleum News
Cleveland, Ohio

An A. B. C. Publication

A.B.C. = Audit Bureau of Circulations = FACTS as a yardstick of advertising value



tions thereto or substitutions therefor and agree that title to the equipment thus installed is and shall remain at all times in the said lessor or its successors or assigns and that the said lessor or its successors or assigns shall have the right to enter upon said premises at any time within thirty days after the expiration of the foregoing Equipment Lease, or any renewal thereof, and remove therefrom any and all articles of equipment placed thereon by said lessor, including the right to make any excavations necessary therefor."

This added paragraph should be signed by the owner of the premises unless the dealer himself owns the premises, and should also be signed before the equipment is installed by anyone holding a mortgage upon the premises.

Before making such installation or acquiring equipment already installed, the jobber should definitely ascertain whether there is an outstanding recorded mortgage on the real estate in question. As to this it is not safe to rely upon the word of the dealer or even the owner of the premises. The only safe procedure is to search the records of the County Recorder, since the jobber making the installation is bound not by what the dealer or the owner of the premises may tell him but by the records of the County Recorder.

Of course, if the dealer owns the property and a search of the county records shows that there is no mortgage on the property, then naturally it is not necessary to have this paragraph signed.

These precautions, if carefully observed, will protect the jobber installing equipment against any claim being successfully asserted against his equipment by either the owner or mortgagee of the premises. There is no justification for the failure to take these precautions. And if these precautions be not taken, a jobber making such an installation in the first instance, or buying the equipment from a prior distributor who had made the installation, can blame nothing but his own indifference if he becomes involved in a lawsuit in which some property owner or mortgagee may claim an interest in or title to the equipment.

It must be kept in mind that most mortgages provide that they shall cover not only all buildings, fixtures, appurtenances, etc., then located upon the premises at the time of the execution of the mortgage, but shall also include any and all buildings, fixtures, appurtenances, etc., which may subsequently be installed thereon during the lifetime of the mortgage.

There is, however, another contingency against which it may prove difficult for a jobber making such an installation, or purchasing from a prior distributor equipment already installed, to protect himself. This occurs where at the time the installation or purchase is made, title to the premises is clear, but subsequently the owner executes a mortgage upon the property and the mortgage is broad enough to cover buildings, fixtures and other appurtenances located thereon. It is manifestly impossible for a jobber installing equipment to make certain that the owner of the property will not execute a mortgage thereon during the period of the Equipment Lease or its renewal. Further it would not be possible to protect one's self against such a contingency for the reason that there is no way of knowing in advance who the mortgagee may be.

Thus we are concerned as to the rights of a subsequent mortgagee in equipment previously installed upon premises later subjected to a real estate mortgage. In the first place, we may say that even such a mortgage holder certainly has no legal claim against air compressors, lubsters, or other articles of equipment which are not fastened to the premises—that is to say, has no claim to any portable equipment which can be removed from the premises without damage to the building or real estate. Nor do we believe he could successfully claim gasoline pumps fastened to the pump islands by lugs or some similar device and which can be removed by simply unscrewing some bolts and disconnecting feed lines for the reason that that can all be done without any damage to the building or premises.

WE THEN come to the question of underground storage tanks or any other form of equipment which may have to be installed underground. The old common law rule was that any equipment which was placed underground or was securely fastened to the ground or was so fastened to the building that it could not be removed without defacing the building or disturbing the ground, became a part of the real estate and therefore the property of the owner of the premises and so subject to a real estate mortgage thereon and the right of the mortgage holder to have it sold to satisfy his mortgage under foreclosure.

Under that doctrine, if a grocer leased a store and for the display of his goods erected shelving nailed to the wall, it became a part of the building and therefore the property of the owner of the building and upon expiration of the lease it could not be removed by the merchant.

This doctrine worked many hardships. With the growth of commerce and industry, the courts evolved the doctrine of "trade fixtures", which meant that where property is leased for the purpose of carrying on business and equipment is installed upon the premises or in the building, then, upon the termination of the lease, the lessee can remove these improvements provided it can be done without any material injury to the building or the real estate—unless, of course, the owner and the lessee specifically contract otherwise.

Applying the present day doctrine of

"trade fixtures" to gasoline dispensing equipment, a lessee could remove first of all such articles as lubsters and air compressors not in any way attached to a building and also such equipment as gasoline pumps which can be disconnected and removed by loosening bolts and lugs, even though there be no specific agreement between the owner and the lessee permitting their removal. Underground tanks present a different situation, since manifestly they cannot be removed without excavating and disturbing the real estate. Therefore, it is very essential that, if underground storage tanks are installed upon premises there be a definite written agreement permitting the lessee or jobber to remove them upon the termination of whatever leasing arrangements he may have.

There is some question as to whether underground storage tanks may not really become common law fixtures in the absence of a specific agreement to the contrary, because, as stated, they cannot be removed without disturbing the soil. And therefore there is always danger that a prior mortgage holder who has not agreed in writing that underground storage tanks shall remain the property of the person installing them, may claim that they become a part of the real estate and so subject to the mortgage. And there is very serious danger that a mortgagee who has taken his mortgage after the tanks have been installed and therefore has signed no such agreement, may insist that the tanks go with the property and may be sold under foreclosure proceedings.

The courts have ruled that the intention of the parties should govern but it is often difficult to prove intention—that is, that the holder of the mortgage did not intend that the underground tanks should be regarded as part of the real estate. And when a mortgage holder starts foreclosure proceedings he naturally endeavors to subject to his mortgage everything upon which he can lay hands.

The courts have also held that, where the intention of the parties cannot be established, then consideration shall be given to the character of the premises. In a recent case decided in Ashtabula county, O., involving the right of an oil company to remove underground tanks as against the claim of the holder of a mortgage executed subsequent to their installation, the property involved was a residence where the owner occupying the house as a residence had cut a driveway across the corner of the premises for the purpose of operating a filling station business. An oil company had installed underground tanks prior to the execution of the mortgage and upon foreclosure the mortgage holder insisted these tanks had become a part of the real estate and must be sold with the real estate to satisfy his mortgage. The court there very properly held that underground gasoline storage tanks did not contribute in any way to the enjoyment of the property as a residence and re-

STOP VAPOR LOSS

from Ordinary Tanks

with a WIGGINS BALLOON

ONE reason for the increasing popularity of the Wiggins Balloon is that it makes practical and profitable vapor saving systems of every size. The Wiggins (*Piston Type*) Balloon shown at the right above is located at the gasoline bulk plant of the Smith Oil & Refining Company, at Rockford, Ill. This installation consists of eight tanks, with a total capacity of 275,000 gallons. The vapor space of each tank is connected to the Balloon, to form a vapor saving system of high efficiency. Because calculations showed that space for 6,000 cu. ft. of vapor would be sufficient, engineers selected the piston type of balloon construction instead of the flat double-diaphragm type which is used for larger capacities.

Prior to the installation of the Balloon, this plant experienced the normal loss of gasoline vapor from ordinary tanks—due to thermal breathing and displacement during filling. Since the Balloon was installed, careful records have been kept, and the figures show that, in two years time, a total of 21,400 gallons of gasoline were saved—more than enough to pay for the installation!

This is a striking example of the way in which Wiggins Balloons are being used to reduce waste and increase profits.

Write for this Bulletin

Write for a new 4-page bulletin which gives a condensed report on the above job. It will be of interest to anyone using ordinary tanks with fixed roofs. Address our nearest office—no obligation.

Chicago Bridge & Iron Company

Cleveland	2206 Rockefeller Bldg.	Dallas	1439 Liberty Bank Bldg.
Chicago	2125 Old Colony Bldg.	Birmingham	1534 N. Fiftieth Street
New York	3345—165 Broadway Bldg.	Houston	2919 Main Street
Philadelphia	1614—1700 Walnut Street Bldg.	Tulsa	1607 Hunt Bldg.
Boston	1516 Consolidated Gas Bldg.	San Francisco	1060 Rialto Bldg.
Detroit	1513 Lafayette Bldg.	Los Angeles	1422 Wm. Fox Bldg.

FABRICATING PLANTS in Birmingham, Chicago and Greenville, Pa.

LICENSEES: Horton Steel Works, Limited, Ft. Erie, Ont., Canada; The Motherwell Bridge & Engineering Co., Ltd., Motherwell, Scotland; The Whessoe Foundry & Engineering Co. Ltd., London, England; Worms & Cie., Paris, France; Compagnia Tecnica Industrie Petroli S. A. I., Rome, Italy.

jected the claim of the mortgage holder.

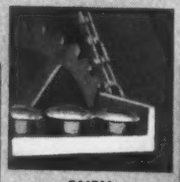
But a different question might arise where the mortgaged property was a parcel of land used and equipped for filling station purposes only with, of course, a filling station building and other appurtenances common to such use, but including underground tanks, installed not by the owner of the premises but by some supplier under an Equipment Lease. There it is possible that, because the tanks could not be removed without disturbing the real estate and because the tanks are necessary to the use of the property for the purpose for which it was improved, the courts might rule that the tanks had become an integral part of the service station property and that the mortgage holder could subject the tanks along with the real estate and service station building to the satisfaction of his mortgage, especially if the mortgage holder could show that he had no notice that the tanks did not belong to the owner of the premises. For example, the courts have held that, where a furnace had been installed in a residence by a furnace company which had recorded with the County Recorder a chattel mortgage upon the furnace, the holder of the mortgage, upon foreclosure, could sell the furnace along with the house for the reason that a furnace is an integral part of a house and necessary to its use and enjoyment for residential purposes.

I am of the opinion, however, that even where underground tanks have been installed by a supplier upon premises improved and intended exclusively for a filling station, and there exists an agreement between the owner and the person making the installation that title to those tanks shall remain in the supplying company and may be removed by it, the courts would rule that a subsequent mortgage holder cannot subject the tanks to his mortgage for the reason that the owner of the property and the person making the installation had not intended that the tanks should remain permanently in the ground and become a definite part of the real estate.

ADD *improved* dag TO YOUR H-T LUBRICANTS

KILN CAR BEARINGS

REDUCES CARBON, FLAKE-OFF AND WEAR



OVEN CHAINS

CONVEYOR CHAINS

GLASS BOTTLE MOLDS

DIE-CASTING MOLDS

Users of glass and ceramic machinery, conveyors, bakery ovens, projectors, die-casting equipment, and other mechanisms in which high temperatures are encountered, are finding lubricants containing "dag" colloidal graphite the ideal solution to their lubrication problems.

Now available in smaller particle size, "dag" furnishes stable suspensions in ***volatile*** petroleum and other fluids. Thus, with the quick evaporation of the carrier fluid, a dry lubricating film of pure "dag" colloidal graphite is left.

Combining physically with metal surfaces without dusting or flaking off, "dag" is chemically inert, non-gumming, odorless, impervious to oxidation, economical . . . AND RETAINS ITS LUBRICATING PROPERTIES UNCHANGED under all operating conditions.

A note on your letterhead will bring Technical Bulletin 130 containing details on the use of "dag" for high temperature lubrication.

"Dag" colloidal graphite is furnished in concentrated form especially suitable for blending in H. T. lubricants. We will gladly show your oil supplier how he may blend "dag" with his present oil.

ACHESON COLLOIDS CORP.
PORT HURON, MICHIGAN

dag COLLOIDAL PRODUCTS

Chemurgists Soft Pedal 'Alky-Gas' at Conference

CLEVELAND—A more cautious approach to the power alcohol question was indicated at the Fifth Annual National Farm Chemurgic Conference recently at Jackson, Miss., than the feverish promotion at Omaha last year.

P. Burke Jacobs, U. S. Department of Agriculture, the only speaker on agricultural alcohol this year, pointed out the importance of availability of replacement fuels in the future and the need for more research but said present uneconomic industrial utilization of farm materials would perhaps give little gain nationally if disadvantage to existing industry is created.

Jacobs said it is preferable to base consideration of alcohol blends upon a national, rather than on a local program. One or a few plants will have insufficient weight to change existing legal, social or economic conditions to the necessary degree to offset present differences of costs between alcohol and gasoline as fuel, he added.

Much of the process research needed to reduce costs of production of agricultural alcohol will be undertaken in new regional laboratories of the Department of Agriculture, particularly at Peoria, Ill., the official continued. It is now proposed that a complete pilot plant for studying alcohol production problems and costs for all likely crops be erected at this laboratory. The work now projected will probably have a great bearing on the future practicability of alcohol fuels from farm products, according to Jacobs. Costs of producing alcohol from farm crops will in great probability be less than those for shale or coal products, he said.

Referring to the recent publication of a bulletin titled "Motor Fuels from Farm Products" from the Bureau of Chemistry and Soils, Jacobs said it was hoped this bulletin might discourage hasty or ill-advised rush of capital into power alcohol production until certain obstacles in the economic use of alcohol blends have been surmounted. Recent developments have shown the wisdom of the decision, he added.

25-Year Club Men Have 3448 Years of Service

NEW YORK, April 17.—The Twenty-five Year Club, organized at the annual meeting of the American Petroleum Institute last November, now includes 104 oil men as charter members. The combined service of these men totals 3448 years, according to the Institute.

Richard A. Wotowitch, Cities Service Oil Co., New York, a veteran with 38 years service, is father of the club.

Oldest charter member is J. W. Van Dyke, chairman of the board, The Atlantic Refining Co., Philadelphia, who has 70 years of service. Only four members have the minimum of 25 years necessary to qualify.

Members of the organization committee of 14 which drew up the club's charter are:

H. T. Ashton, Socony-Vacuum Oil Co. Inc., St. Louis; B. H. Brown, Humble Oil and Refining Co., Houston; H. W. Dodge, The Texas Co., New York; M. J. Greenwood, Utah Oil & Refining Co., Salt Lake City; B. I. Graves, Tidewater Associated Oil Co., San Francisco; Roy B. Jones, Panhandle Refining Co., Wichita Falls, Tex.

D. J. Moran, Continental Oil Co., New York; A. M. Maxwell, Standard Oil Co. of Ohio, Cleveland; J. W. Saybolt, Standard Oil Co. of New Jersey, New York; Charles L. Suhr, The Pennzoil Co., Oil City, Pa.; J. W. Van Dyke, The Atlantic Refining Co., Philadelphia; E. Whitehead, Tidewater Associated Oil Co., San Francisco; and Norton H. Weber, The Pure Oil Co., Chicago.

Deep Rock Expands Chicago Plant

CHICAGO—Deep Rock Oil Corp. announced it has recently increased storage facilities at its East Chicago transport terminal in excess of 100,000 gallons.

Installation of latest type meters, complete compounding and packaging facilities for all grades of branded and unbranded lubes and greases, barrel cleaning and reconditioning facilities also was included in the enlargement program.

Transport operating out of the terminal supply northern Michigan, the northern half of Indiana and northern Illinois including metropolitan Chicago.

Chicago Jobber Takes Over Plant

CHICAGO—Oklahoma Oil Corporation, independent wholesale and retail distributors of gasolines and fuel oils today announced they had recently moved into plant formerly occupied by Barnsdall Refining Co. here. President Ben Burakoff said that the progress and expansion made by the company in the last two years necessitated this change. The company sells petroleum products under its own brand.

IRON CARBONYL ANTI-KNOCK COMPOUND
AVAILABLE IN COMMERCIAL QUANTITIES

For immediate delivery. Perfectly stabilized to light fastness and chemical reaction in combustion eliminated. Nonpoisonous. One CC raises the octane four points. Cost per octane count lower than present price of other anti-knock compounds.

FOR FULL PARTICULARS WRITE . . .

TECHNICAL CHEMICAL COMPANY, Dallas, Texas

The boss answers a **FAMOUS** BED-TIME STORY!

DEAR MR. BOSS:—

I'm sure going to town on motor oil this month as you'll see from the attached list of orders.

I've got a system now, and my gallonage shows it works.

I know you wanted me to sell more of the better Pennsylvania Grades, but I figure a sale is a sale, and if price is what will get the business, we should worry!

As far as I know, we never have any complaints regardless of whether we sell Pennsylvania, or compounded, or our low-priced oils.

Salesman Joe

DEAR JOE:—

Listen, my boy, I don't like to puncture your enthusiasm . . . but I've checked your orders and you are absolutely right . . . you should worry!

Any salesman who sells more cheap oil than quality oil is playing with dynamite. Of course customers don't complain about cheap oils . . . they can buy cheap oils in plenty of places. Always remember this, it's repeat business that pays, not the one-time sales. Sure you've got to sell some low priced oils because some people just can't afford the better oils for a while.

Take a tip from our experience . . . we've been through the mill. The surest way to build a substantial, profitable, repeating volume is to sell quality oils . . . preferably above average in quality . . . like Canfield Pennsylvania Oils.

Your Boss

INVESTIGATE THIS "EXTRA MEASURE OIL"—WRITE FOR FULL DETAILS AND PRICES

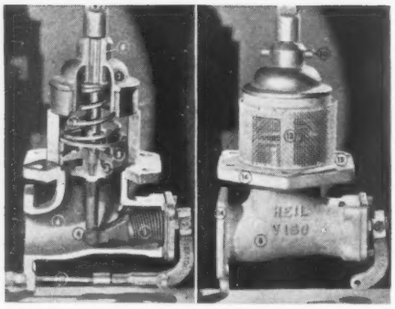
Satisfied, repeating customers are the lifeblood of any business, and Canfield Pennsylvania Oil, with its extra measure of protection, lubrication, power, pep and mileage assures permanent satisfaction, fair profit margins, and substantial dollar sales.

THE CANFIELD OIL COMPANY

GENERAL OFFICES, CLEVELAND, OHIO
PLANTS: CORAOPOLIS, PA. • CLEVELAND, OHIO • JERSEY CITY, N. J.

Canfield QUALITY **PENNSYLVANIA MOTOR OILS**

100% PURE PENNSYLVANIA OIL



Here's why it pays you to investigate Heil Rapid-Flo Emergency Valves

Speedy. Large, unobstructed free-flow passage for quick delivery.

Safe. Fusible link in operator melts in case of fire, allowing emergency valves to seat automatically.

Also, shear section beneath valve seat breaks when serious accident occurs to piping, leaving valve seat intact, preventing loss of liquid.

Convenient. Removable brass bonnet permits replacement of valve seat assembly through manhole, without man entering tank.

Dependable. Precision built for long life.

Write today for free, colorful Heil Rapid-Flo Emergency Valve bulletin.

THE HEIL CO.

Milwaukee, Wisconsin Hillside, New Jersey

World Famous Manufacturers of Heil Transportation Tanks

INHIBITOR "K"

Inhibitor **"K" is now available to the industry through licenses, a limited number of which will be granted together with priority agreements.**

Inhibitor **"K" is an effective agent in the prevention of lacquer and varnish deposits. Blends readily and permanently. Retards stratification.**

Proved by laboratory, road and refinery tests.

One gallon of *Inhibitor* "K" to 1600 gallons of gasoline or 100 gallons of lubricating oil is a standard blend.

First licenses issued late in 1938. Patented.

Details as to *costs* and tieup with your *merchandising program*, promptly given on request.

KEMIX LABORATORIES

West Springfield, Erie County, Penna.

Michigan Jobbers Urged To Solve Own Problems

By ALLEN W. JANUSCH
N.P.N. Staff Writer

DETROIT—Michigan jobbers holding their convention here April 11-12 were told by George C. Newton, Iron Mountain, Mich., of Lake States Oil Co., that it is "far better for us to work out solutions to our problems within framework of the industry itself than to submit them to revenue-seeking government officials who are often solely interested in retaining popular favor by giving a low price to the consumer and a high price to the producer, resulting in a hardship on the middleman."

"It is the business of every jobber," Newton added, "to aid the retailer in maintaining a reasonable and fair margin in every way possible." Newton criticized supplying companies which "openly announce adherence to the 'Iowa Plan' and yet continue to control their retail outlets."

During his speech, Newton pointed out how his company had carried the fight for "fair" margins direct to the consuming public through advertisements in local newspapers. (An article on Lakes State Oil Co.'s newspaper advertising during a local price war, together with a facsimile of one such advertisement, was published in N.P.N. of March 8th, Page 25—Editor.)

Michigan Petroleum Ass'n., concluded its two-day meeting April 12, attended by approximately 150 jobbers, with adoption of resolutions. Election of officers was deferred until the fall meeting.

Opening speech of the Michigan convention was by Neil Staebler, Ann Arbor, of Staebler Oil Co., who urged that jobbers back bills pending in Congress for divorcement of pipelines and to separate marketing activities of integrated companies from their production, refining and transportation operations.

Declaring that over four times as many people are engaged in oil marketing as in all other branches of the industry, Staebler said, that with the only means of escape for the jobber, with "constantly shrinking" margin and lower profits, is through enactment of the Gillette marketing divorcement bill.

Staebler told of several major integrated companies who after "subsidizing" their marketing divisions continued to build new service stations "even though there is already an oversupply of them," and incorporated the "loss" incurred by the construction of such stations in a "depreciation fund."

"All the mistakes of the other three branches of the industry are rectified in the marketing division," Staebler said. Passage of the divorcement bills would bring back the sense of 'fair play' so lacking in the industry, particularly in the past ten years."

Passage of the divorcement bills, Staebler said in conclusion, would enable the independent marketer to compete more successfully with the integrated companies, who would be forced to operate on the same basis and consequently pay income taxes on revenue which at the present time is being used for the further development of their marketing facilities.

Subsequently, the convention adopted a resolution to send each member of the association copies of bills now before Congress involving pipeline and marketing divorcement, with the recommendation that after a thorough study each jobber write his senator and representative as to his views on the various bills.

Elmer Ledbetter, Detroit, of Wayne Oil Co., in his discussion of a "Tenderfoot's Ideas" emphasized that:

(1) "We are handling one of the most important things in the world."
(2) "The public is willing to pay our price for it."
(3) 'The government is frowning on our foolish competition over it."
(4) "Too many of us are having hard times."

Lack of the true spirit of sportsmanship and too much competition "among ourselves," coupled with a "lack of brains have caused much of our present trouble," he indicated.

In conclusion, Ledbetter decried the "recent circulation of propaganda to the effect that the marketing end of the business must get along with much reduced margins." He said such "propaganda" had originated within the industry itself.

Andrew A. Trimble, Cleveland, O., entertained with stories of several amusing experiences he had due to his great similarity to the late Will Rogers.

Another resolution, unanimously adopted, was that introduced by William Davis, Roosevelt Oil Co. opposing bills to tax fuel oil. Davis said enactment of such bills would be a direct levy on fuel oil users as railroads, steamship lines, steel plants, private homes, etc. and that it would retard research into the further development of fuel oil uses, to the detriment of a vast number of users.

William Palmer, secretary of the Michigan Petroleum Industries Committee, briefly summarized oil bills now before state legislature. Most important of these is a bill to limit tank truck capacity to 2000 gallons except where special permit was granted to carry up to 5000 gallons on certain highways where travel was light. This bill, according to Palmer, was sponsored by competitive carriers "in the interests of safety." He said it has a slim chance of passing. The bill specifying the use of a 10-per cent blend of

alcohol in all gasoline sold in the state was given slight chance by Palmer, who pointed to the large available supply of gasoline at a much cheaper cost. Concluding, Palmer assured the members that his committee would vigorously oppose any new tax levies or other bills detrimental to the welfare of the oil industry.

Francis C. Spence, director of the National Small Business Men's Association decried the "lack of fearless and sound leadership" among businessmen, chiefly in opposition to the government's vast "free spending program." He urged the association members to "do all in their power to settle controversial problems among themselves rather than to seek legislative counsel, thus increasing taxes and bringing on governmental influence and control."

History of the gasoline tax over the past ten years was briefly reviewed by J. D. Hadley, state tax director. Terming the gasoline tax an "easy form of revenue" Hadley stated that up until a few years ago there had been a consistent effort on the part of most state legislative bodies to steadily increase this tax, but he assured the jobbers that every effort would be made to oppose any further increase in the present 3 cent state gasoline tax.

A third resolution adopted by the association opposed the bill now pending in the Michigan legislature to substitute a 2 cent per gallon increase in the gasoline tax for the present weight tax on motor vehicles, thus raising the gasoline tax from 3 to 5 cents. Passage of this bill, it was said, would discourage tourist travel in the state of Michigan, cause a terrific loss of sales and gallonage particularly in sections bordering the state line and finally would result in a considerable loss in gasoline tax revenue to the state due to lower gasoline tax in adjoining states.

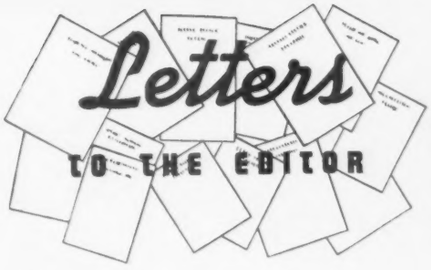
During discussion of this tax resolution, John Jankoviak, Suburban Oil Co., spoke in support of a bill which would take the cost of gasoline tax bonds out of gasoline tax collections. He pointed out that "jobbers are in a sense employes of the state" in collecting the gasoline tax; other government officials do not pay premium on their bonds, he added.

Lee Morden, treasurer, received hearty applause from all the members when he placed the net cash value of the association at $1729.72.

Oil Burner Standards

WASHINGTON, April 17. — Proposed commercial standards for mechanical draft oil burners, as revised at the recent conference of manufacturers and distributors, are available from the National Bureau of Standards, at Washington.

A general conference on these standards will be held April 27 at Washington, according to I. J. Fairchild, chief, division of trade standards of the bureau.



Dear Editor:

"After reading your article in the April 5th issue, Page 14, regarding bills limiting tank truck capacities I feel I would like to make a few comments.

"To start with I am not against transports, for transporting gasoline. However, I am satisfied the reason the independent oil jobbers of South Dakota, voted against the transports at their convention in Watertown, last February was on account of the way they conducted their business.

"They seem to think they have a right to dump their 'gas' into anybody's station, regardless of whose products are being advertised. By their chiseling on other dealers' accounts, they will demoralize the oil business for any independent jobber who tried to hold prices to a fair profit.

"If Mr. R. W. Reynolds, of Canton, S. Dak., is interested in his men transporting Champlin products they should make some effort to confine their business to their own dealers advertising their own products.

"If they would conduct their business on an ethical and fair price basis the transporters would not have any trouble. If not I think they will have to blame themselves for their own troubles.

"I know plenty other jobbers who feel the same way about the transporters as I do."

L. J. Boehnen Oil Co.,
(Signed) By L. J. Boehnen

* * *

Dear Editor:

"The writer recently saw a text of the Oil Marketing Code which is now under discussion. One example of the cock-eyed thinking that goes on in our industry is the definition given of a lubricating oil jobber.

"He is described in Rule 1, Section 2 (b) as follows: 'One who handles lubricating oils and/or grease (without gasoline, kerosine etc.) and maintains a warehouse of not less than one minimum carload capacity.'

"In other words, the warehouse must be the size of a boxcar, 8 x 36 feet, or say 12 x 24, or 16 x 18, or maybe a double alley garage. If it has one drum of oil or grease in it the man is a lubricating oil jobber. Apparently nothing was learned from the NRA. For a plain damphool definition this is the worst.

"A legitimate lubricating oil jobber should be one who purchases in carlots or at the very least should have a carload of oil in stock."

(Signed) A. B. Gardner,
President-Treasurer,
United Oil Company, Inc.

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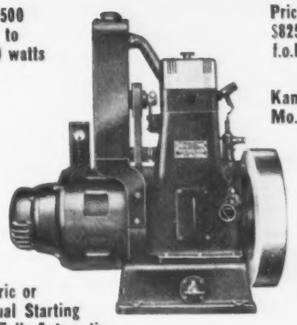

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Markets

Mid-Continent

TULSA, April 17.—Trading in Grade 26-70 natural gasoline was active in the Mid-Continent last week, with 217 cars reported sold in the open market. Majority of sales—184 cars—were f.o.b. Breckenridge. Prices ended the week at 2.5 to 2.625 cents f.o.b. Group 3, and 2.5 cents f.o.b. Breckenridge.

Refined gasoline sales in the open market were spotty, reports indicated. Only occasional sales of 67-69 octane and 70-72 octane gasoline were reported in Oklahoma. Supplies available for immediate delivery were closely held, it was said. One Oklahoma refiner said he was trying to buy 100 cars of 67-69 octane gasoline.

Mid-Western

CHICAGO, April 17.—Supplies of all grades of gasoline continued to be closely held by refiners, Chicago tank car marketers reported the past week. With the exception of an 0.125-cent reduction in price of 70-72 octane reported by one market, quotations for the most part were unchanged, reports indicated. Open spot gasoline sales reported during the week totaled 21 cars.

Eastern

NEW YORK, April 17.—Gasoline prices along the eastern seaboard have started to reflect the improved position of this product at the Gulf, according to reports of suppliers the week ended April 15.

Prices for high octane gasoline were reported 0.25 cent higher by New York harbor suppliers at 6 cents and 5.75 cents for tank cars and barge lots, respectively.

Reports from other key markets along the coast late in the week generally were that some suppliers were asking higher prices.

Pennsylvania

CLEVELAND, April 17.—Aside from higher prices for low pour test neutral oils, no changes were reported in refinery prices in western Pennsylvania in the second week of April. Only one refiner reported quoting the low pour test neutrals and his prices were up 0.25 cent early in the week, he said.

Gulf

NEW YORK, April 17.—Despite the fact that activity in the Gulf cargo gasoline market subsided the week ended April 15, prices were reported to be well entrenched at the higher levels reached the week previous.

Traders generally said that reports from Gulf refiners were to the effect that the heavy buying of gasoline the last days of March and the first week of April had resulted in little gasoline being available for prompt lifting, with several reported to be sold up until the second half of May.

Two inquiries for foreign movement were said to be kicking around the market, but as the week ended reports indicated that they had not been closed.

Bunker C fuel oil was reported still virtually unobtainable for prompt shipment.

Michigan

CHICAGO, April 17.—Michigan refiners reported good demand for straight run gasoline for tractor fuel the second week of April. High octane grades also were in good demand, they said. Prices generally were reported unchanged.

Wax

NEW YORK, April 17.—Prices for white crude scale and fully refined wax were reported firm at levels attained recently. Scale grades, especially, were reported in good shape. No changes were reported in export or domestic quotations the past week.

California

LOS ANGELES, April 15.—Although inquiries described as "feelers" continued to be received on the west coast from Atlantic foreign buyers interested in cargo lots of aviation and 65 octane gasoline, suppliers said they believed these were merely checks against quotations on the Gulf.

Awards on 10 cargoes of aviation-type crude oil from California fields by the Japanese government were reported, ranging from $1.47 to $1.51 on an oil guaranteed to make 92 octane aviation gasoline and at around $1.00 on a crude carrying a specified percentage of 89 octane gasoline—the award was for five cargoes of each.

Domestic markets were featured by a 2-cent increase reported in most retail prices on competitive grades of gasoline by independent refiners, following the 1-cent increase in tank wagon prices a week ago. At the rack of these plants, quotations were generally 7.5 cents, exclusive of tax, although some sales were reported at 7.25 cents.

N.P.N. Gasoline Index

	Dealer T.w. Cents per Gal.	Tank Car Gal.
April 17	9.37	5.53
Month ago	9.35	5.49
Year ago	10.24	5.95

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 12 wholesale markets for regular-grade gasoline.

Fuel Oil

NEW YORK, April 17.—Fuel oil markets along the eastern seaboard were gradually slipping into the in-between season lull, as the heating oil season advanced nearer its close.

Weather conditions have been temperate in most sections along the seaboard, and while a fair volume of fuel continued to be consumed, nevertheless, interest in prices has subsided considerably, according to reports.

No. 6 has stepped into the spotlight of trade attention. Suppliers believe this oil will be higher in the near future, pointing to prices of 73 to 75 cents per barrel at the Gulf, and the current boat rate of around 17 cents per barrel, as compared with 95 cents at eastern seaboard terminals.

* * *

TULSA, April 17.—Conflicting reports were heard regarding light fuel oils in the Mid-Continent last week. Some suppliers reported demand was slack and there were some indications that current quotations were being shaded. Others said that while orders were spotty, overall volume was sufficient to absorb current reduced production. Prices for the most part were reported unchanged.

* * *

CHICAGO, April 17.—Demand for tractor fuels from farm areas apparently is making up for the decline in demand for light fuel oils for heating purposes, according to reports of Chicago tank car marketers. No. 1 oils were quoted 0.125 cent lower by some marketers the past week but aside from this, quotations for both light and heavy fuels were reported unchanged.

Gasoline Pump Tells Its Story to Public

Telling the public about the oil industry and the gasoline pump is a job undertaken by the Gasoline Pump Mfgrs. Association of New York. Their managing director, G. Denny Moore, has written and they have printed, a small 20-page book, snappily gotten up, to be handed out by the pump operator, to the gasoline customer. The pump companies are distributing these booklets to their customers.

The booklet is entitled "Surprising But True" and it contains pungent statements of interesting facts about the oil industry and the gasoline pump. Inside the back cover are columns for keeping a record of gasoline and oil bought, the tax, and the mileage run.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel of 42 gallons, wax and petrolatums in cents per pound in barrels, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Gasoline

Prices Effective	April 17	April 10
OKLAHOMA		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.875- 4.25	3.875- 4.25
63-66 oct.	4.125- 4.375	4.125- 4.375
67-69 oct.	4.375- 4.75	4.375- 4.75
70-72 oct.	4.625- 5.00	4.625- 5.00
60-62, 400 e.p.	(h)4.00	(h)4.00
WESTERN PENNA. REFINERY QUOTATIONS		
Bradford-Warren:		
Motor gasoline:		
U. S. Motor:		
Min. 65 oct.	6.00 - 6.75	6.00 - 6.75
Min. 70 oct.	(h)6.50	(h)6.50
"Q" gasoline	(h)6.50	(h) 6.50 -6.75
Other districts:		
Motor gasoline:		
U. S. Motor (58-62° gravity):	4.50 - 5.00	4.50 - 5.00
"Q" gasoline	6.25 - 7.00	6.25 - 7.00
CENTRAL MICHIGAN (a)		
Str.-Run Gasoline	(c) 4.00 - 4.50	(c) 4.00 - 4.50
U. S. Motor: (Octane L-3)		
67-69 octane	(e)6.50	(e)6.50
70-72 octane	7.25	7.25

Prices Effective	April 17	April 10
CALIFORNIA (3c tax to be added if used in state)		
U. S. Motor:		
54-58 gravity, for in-state shipment	7.25 - 9.25	7.50 - 9.25
54-58 gravity, for out-side state shipment	7.00 - 9.00	7.25 - 9.00
58-61 gravity, 375-400 e.p., 65 oct. & above	8.25 - 9.75	8.25 - 9.75
N. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	3.875- 4.375	3.875- 4.375
63-66 oct.	4.375- 4.625	4.375- 4.625
67-69 oct.	4.50 - 4.875	4.50 - 4.875
70-72 oct.	4.625- 5.25	4.625- 5.25
60-62, 400 e.p.	(h)3.875	(h)3.875
KANSAS (For Kansas destinations only)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125- 5.00	4.125- 5.00
67-69 octane	4.50 - 5.50	4.50 -5.50
70-72 octane	4.875- 5.875	4.875- 5.875
W. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.00 -4.375	(h) 4.00 -4.375
63-66 oct.	(e)4.50	(e)4.50
67-69 oct	(h) 4.50 - 5.00	(h) 4.50 - 5.00
70-72 oct	(h) 5.00 - 5.50	(h) 5.00 - 5.50

Prices Effective	April 17	April 10
CENTRAL WEST TEXAS (Prices to truck transports)		
U. S. Motor Gasoline: (Octane L-3)		
62 oct. & below	(e)4.00	(h) 3.875-4.00
63-66 octane	(i)	(e)4.625
66-70 octane	(e)5.25	(e)5.25
E. TEX.		
U. S. Motor Gasoline, (Octane L-3)		
70-72 oct.	(h) 4.50 -4.75	(h) 4.50 - 4.75
60-62, 400 e.p.	(b) 4.25 -4.375	(b) 4.25 -4.375
N. LA. (For shipment to La. & Ark.)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.125-4.375	(h) 4.125-4.375
63-66 oct.	(e) 4.375-4.625	(e) 4.375-4.625
67-69 oct.	(e) 4.625-4.875	(e) 4.625-4.875
70-72 oct.	(e) 4.875-5.375	(e) 4.875-5.375
ARKANSAS (F.o.b. Ark. plant of one refiner, for shipment to Ark. & La.)		
U. S. Motor: (Octane L-3)		
62 octane & below	4.125	4.125
67-69 oct.	4.50	4.50
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
U. S. Motor	7.375	7.375
Above 65 oct.	7.625	7.625

(Continued on next page)

(a) Prices FOR Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations; Group 3 prices quoted for northern shipment. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) Two suppliers quoting. (g) To resellers holding licenses. (h) Two refiners quoting. (i) No quotations reported.

MID-WESTERN TANK CAR MARKET

Prices in this Mid-western Tank Car Market table are gathered from refiners and tank car marketers or brokers from their offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight rate basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Generally when prices are quoted in this Chicago market, the origin of the material is not known at the time the quotation is given, oftentimes even with the quoting refiners who have refineries in more than one refining district. All other gasoline prices are given by and for the particular refining district where the material is made and from which it is shipped.

Gasoline

Prices Effective	April 17	April 10
U. S. Motor: (Octane L-3)		
62 oct. and below	3.75 - 4.125	3.75 - 4.125
63-66 oct.	4.00 - 4.125	3.875- 4.125
67-69 oct.	4.125- 4.625	4.00 - 4.50
70-72 oct.	4.25 - 4.875	4.25 - 4.75

Kerosine

41-43 gravity, w.w.	3.50 - 4.125	3.50 - 4.125
42-44 gravity, w.w.	3.625- 4.375	3.625- 4.375

Fuel and Gas Oils

Prices Effective	April 17	April 10
No. 1 p.w.	3.25 - 3.875	3.375- 3.875
No. 1 straw	3.25 - 3.50	3.375- 3.50
No. 2 straw	3.125- 3.50	3.125- 3.50
No. 3	3.00 - 3.25	3.00 - 3.25
No. 5	$0.575-$0.70	$0.575-$0.70

Prices Effective	April 17	April 10
No. 6	$0.35 -$0.45	$0.35 -$0.45
U. G. I. gas oil	2.625- 3.00	2.625- 3.00
Range oil	3.375- 4.00	3.375- 4.00

Naphtha and Solvent

Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	7.375	7.375

Daily range of gasoline prices as reported in PLATT'S OILGRAM (Week Ended April 14, 1939)

	April 10	April 11	April 12	April 13	April 14
U. S. Motor, (Octane Number determined according to L-3Method in Okla., Texas and Mid-Western Districts):					
62 octane and below:					
Oklahoma	3.875- 4.25	3.875- 4.25	3.875- 4.25	3.875- 4.25	3.875- 4.25
(a) North Texas	3.875- 4.375	3.875- 4.375	3.875- 4.375	3.875- 4.375	3.875- 4.375
West Texas	(d) 4.00 -4.375	(d) 4.00 -4.375	(d) 4.00 -4.375	(d) 4.00 -4.375	(d) 4.00 -4.375
Mid-Western (Group 3 basis)	3.75 - 4.125	3.75 - 4.125	3.75 - 4.125	3.75 - 4.125	3.75 - 4.125
63-66 octane:					
Oklahoma	4.125- 4.375	4.125- 4.375	4.125- 4.375	4.125- 4.375	4.125- 4.375
(a) North Texas	4.375- 4.625	4.375- 4.625	4.375- 4.625	4.375- 4.625	4.375- 4.625
West Texas	(b)4.50	(b)4.50	(b)4.50	(b)4.50	(b)4.50
Mid-Western (Group 3 basis)	3.875- 4.125	3.875- 4.125	3.875- 4.125	3.875- 4.125	3.875- 4.125
67-69 octane:					
Oklahoma	4.375- 4.75	4.375- 4.75	4.375- 4.75	4.375- 4.75	4.375- 4.75
(a) North Texas	4.50 - 4.875	4.50 - 4.875	4.50 - 4.875	4.50 - 4.875	4.50 - 4.875
West Texas	(d) 4.50 -5.00	(d) 4.50 -5.00	(d) 4.50 -5.00	(d) 4.50 -5.00	(d) 4.50 -5.00
Mid-Western (Group 3 basis)	4.00 - 4.50	4.00 - 4.50	4.00 - 4.50	4.00 - 4.50	4.00 - 4.50
70-72 octane:					
Oklahoma	4.625- 5.00	4.625- 5.00	4.625- 5.00	4.625- 5.00	4.625- 5.00
(a) North Texas	4.625- 5.25	4.625- 5.25	4.625- 5.25	4.625- 5.25	4.625- 5.25
West Texas	(d)5.00 -5.50	(d) 5.00 -5.50	(d) 5.00 -5.50	(d) 5.00 -5.50	(d) 5.00 -5.50
East Texas	(d) 4.50 -4.75	(d) 4.50 -4.75	(d) 4.50 -4.75	(d) 4.50 -4.75	(d) 4.50 -4.75
Mid-Western (Group 3 basis)	4.25 - 4.75	4.25 - 4.875	4.25 - 4.875	4.25 - 4.875	4.25 - 4.875
Motor Gasoline, 60-64 octane:					
New York harbor	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	6.00 - 6.25	6.00 - 6.25
Philadelphia district	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25
Baltimore district	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00
Motor Gasoline, 65 octane & above:					
New York harbor	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	6.00 - 6.25	6.00 - 6.25
Philadelphia district	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25	5.75 - 6.25
Baltimore district	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00	5.75 - 6.00
U. S. Motor, 58-62°:					
Other districts (Western Penna.)	4.50 - 5.00	4.50 - 5.00	4.50 - 5.00	4.50 - 5.00	4.50 - 5.00
Motor Gasoline, Min. 65 octane:					
Bradford-Warren (Western Penna.)	6.00 - 6.75	6.00 - 6.75	6.00 - 6.75	6.00 - 6.75	6.00 - 6.75
Motor Gasoline, Min. 70 octane:					
Bradford-Warren (Western Penna.)	(d)6.50	(d)6.50	(d)6.50	(d)6.50	(d)6.50
"Q" Gasoline:					
Bradford-Warren (Western Penna.)	(c&d)6.50-6.75	(c&d)6.50-6.75	(c&d)6.50-6.75	(c&d)6.50-6.75	(c&d)6.50-6.75
Other Districts (Western Penna.)	(c) 6.25- 7.00	(c) 6.25- 7.00	(c) 6.25- 7.00	(c) 6.25- 7.00	(c) 6.25- 7.00

(a) For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipment. (b) One refiner quoting. (c) To resellers holding licenses. (d) Two refiners quoting

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon except heavy fuel oils in dollars per barrel of 42 gallons, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Natural Gasoline

(Prices to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

Prices Effective	April 17	April 10
FOB GROUP 3		
Grade 26-70	(m)2.50	(m)2.50 -2.625
FOB BRECKENRIDGE		
Grade 26-70	(m)2.50	(m)2.50
CALIFORNIA (F.o.b. plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	6.25 - 6.75	6.50 - 6.75

Kerosine

WESTERN PENNA. REFINERY QUOTATIONS

Bradford-Warren:		
45 gravity w.w.	5.00	5.00
46 gravity w.w.	(e) 5.375-5.50	(e) 5.375-5.50
Other districts:		
45 gravity w.w.	5.00 - 5.25	5.00 - 5.25
46 gravity w.w.	(h)5.125	(h)5.125
47 gravity w.w.	5.25	5.25
CENTRAL MICHIGAN (a)		
47-49 gravity w.w.	5.00 - 5.25	5.00 - 5.25
OKLAHOMA		
41-43 gravity w.w.	3.875- 4.25	3.875- 4.25
42-44 gravity w.w.	4.00 - 4.625	4.00 - 4.625
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	(e)4.25	(e)4.25
42-44 gravity w.w.	4.375- 4.50	4.375- 4.50
N. TEX. (b)		
41-43 gravity w.w.	4.25 - 4.50	4.25 - 4.50
N. LA. (For shipment to La. and Ark.)		
41-43 gravity w.w.	(h) 4.00 -4.125	(h) 4.00 -4.125
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 gravity w.w.	4.25	4.25
CALIFORNIA		
40-43 gravity w.w.	5.00 - 7.00	5.00 - 6.75

Gas *and* Fuel Oils

WESTERN PENNA. REFINERY QUOTATIONS

Bradford-Warren:		
36-40 gravity	(e)4.625	(e)4.625
Other districts: (Excluding Pittsburgh District Prices)		
36-40 gravity	4.25 - 4.375	4.25 - 4.375
CENTRAL MICHIGAN (a)		
P.W. Distillate	4.50 - 4.75	4.50 - 4.75
No. 3 gas oil, Str.	4.00 - 4.50	4.00 - 4.50
U.G.I. gas oil	3.75 - 4.00	3.75 - 4.00
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.00 - 2.375	2.00 - 2.375
300-500 Vis.	2.25 - 2.50	2.25 - 2.50
100-300 Vis.	2.375- 3.25	2.375- 3.25
OKLAHOMA		
No. 1 prime white	3.50 - 4.00	3.50 - 4.00
No. 1 straw	(h) 3.375-3.625	(h) 3.375-3.625
No. 2 straw	3.25 - 3.625	3.25 - 3.625
No. 2 dark	(h) 3.125-3.25	(h) 3.125-3.25
U.G.I. gas oil	(h) 3.25 -3.375	(h) 3.25 -3.375
28-30 gravity fuel oil	(e)3.25	(e)3.25
28-30 gravity zero fuel	2.75 - 3.25	2.75 - 3.25
24-26 gravity fuel	(e) $0.85-$0.90	(e) $0.85-$0.90
14-16 gravity fuel	(e)$0.70	(e)$0.70
No. 6 fuel	(h) $0.35-$0.45	(h) $0.35-$0.45
Range oil	(h)3.625	(h) 3.875-4.00
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	3.625- 4.00	3.625- 4.00
10-14 gravity fuel oil	$0.45 -$0.80	$0.45 -$0.80
N. TEX. (b)		
No. 1 Prime white	(e)4.00	(e)4.00
N. LA. (For shipment to La. and Ark.)		
20-24 gravity fuel	(e) $1.00-$1.05	(e) $1.00-$1.05
16-20 gravity fuel	(e) $0.80-$0.85	(e) $0.80-$0.85
10-14 gravity fuel	(e) $0.70-$0.75	(e) $0.70-$0.75
ARK. (F.o.b. Ark. plant of one refiner, for shipment to Ark. and La.)		
No. 2 fuel	3.375	3.375
28-30 gravity gas oil, zero	3.125	3.125
Tractor Fuel	(j)4.25	(j)4.25

Prices Effective	April 17	April 10
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.50 -$0.75	$0.50 -$0.75
Light fuel	$0.70 -$0.85	$0.70 -$0.85
Diesel fuel (per gal.)	2.75 - 4.00	3.00 - 4.00
Stove dist. (per gal.)	3.25 - 5.00	3.25 - 5.00
Los Angeles:		
Heavy fuel	$0.50 -$0.90	$0.43 -$0.90
Light fuel	$0.60 -$1.00	$0.60 -$1.00
Diesel fuel (per gal.)	2.125- 4.00	2.375- 4.00
Stove dist. (per gal.)	2.375- 5.00	2.75 - 5.00
San Francisco:		
Heavy fuel	$0.95	$0.95
Light fuel	$1.05	$1.05
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA. REFINERY QUOTATIONS

Viscous Neutrals No. 3 col. (Viscosity at 70° F.)

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	(e)19.25	(h)19.00
10 p.t.	(e)18.25	(h)18.00
15 p.t.	(e)17.75	(h)17.50
25 p.t.	16.25 -16.50	16.00 -16.50
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	(e)18.25	(h)18.00
10 p.t.	(e)17.25	(h)17.00
15 p.t.	(e)16.25	(h)16.00
25 p.t.	14.25 -15.50	14.00 -15.00

SOUTH TEXAS

Vis. Color		
Pale Oils: (*Vis. at 100°F.*)		
100 No. 1½-2½	4.50 - 5.00	4.50 - 5.00
200 No. 2-3	6.00 - 6.25	6.00 - 6.25
300 No. 2-3	6.50 - 6.75	6.50 - 6.75
500 No. 2½-3½	7.50 - 7.75	7.50 - 7.75
750 No. 3-4	8.00 - 8.25	8.00 - 8.25
1200 No. 3-4	8.375- 8.75	8.375- 8.75
2000 No. 4	8.50 - 9.25	8.50 - 9.25
Red Oils:		
200 No. 5-6	6.00 - 6.25	6.00 - 6.25
300 No. 5-6	6.50 - 6.75	6.50 - 6.75
500 No. 5-6	7.50 - 7.75	7.50 - 7.75
750 No. 5-6	8.00 - 8.25	8.00 - 8.25
1200 No. 5-6	8.375- 8.75	8.375- 8.75
2000 No. 5-6	8.50 - 9.25	8.50 - 9.25

Note: Red oil prices cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

Pale Oils: (0 to 10 P.P.)		
Vis. Color		
60-85—No. 2	5.50	5.50
86-110—No. 2	6.00	6.00
150—No. 3	9.00	9.00
180—No. 3	9.50 -10.00	9.50 -10.00
200—No. 3	10.00 -10.50	10.00 -10.50
250—No. 3	11.00 -11.50	11.00 -11.50
280—No. 3	12.50	12.50
300—No. 3	13.00	13.00
Red Oils:		
180—No. 5	(e)9.00	(e)9.00
200—No. 5	9.00 -10.00	9.00 -10.00
280—No. 5	11.50 -11.75	11.50 -11.75
300—No. 5	(h)12.00	(h)12.00

Note: The following oils, of 15 to 25 p.p., are generally quoted these amounts under 0-10 p.p.; viscous oils, 0.5c; non-viscous, 0.25c Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils 0 to 10 p.p.		
Vis. Color		
60-85—No. 2	7.25	7.25
86-110—No. 2	7.75	7.75
150—No. 3	9.00	9.00
180—No. 3	10.00	10.00
200—No. 3	10.50	10.50
250—No. 3	11.50	11.50

Prices Effective	April 17	April 10
CHICAGO (Continued)		
Red Oils:		
180—No. 5	9.00	9.00
200—No. 5	9.50	9.50
250—No. 5	10.50	10.50
280—No. 5	11.50	11.50
300—No. 5	11.75	11.75

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis)

Bright Stocks:		
190-200 Vis. at 210° D.	(e)19.00	(e)19.00
150-160 Vis. at 210°D:		
0 to 10 p.p.	14.25 -16.00	14.25 -16.00
10 to 25 p.p.	13.50 -15.00	13.50 -15.00
25 to 40 p.p.	(h) 13.25-13.50	(h) 13.25-13.50
150-160 vis. at 210° E.	12.50 -14.50	12.50 -14.50
120 Vis. at 210° D		
0 to 10 p.p.	(h) 13.75-14.50	(h) 13.75-14.50
25 to 40 p.p.	(e)12.75	(e)12.75
600 S.R. Dark Green	(e)5.50	(e)5.50
600 S.R. Olive Green	(h) 7.00 - 7.50	(h) 7.00 -7.50
631 S.R.	(e)12.50	(e)12.50
Black Oil	(h) 3.50 -4.00	(h) 3.50 -4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	15.75	15.75
15 to 25 p.p.	14.75	14.75
30 to 40 p.p.	14.25	14.25
E filtered Cyl. Stock	13.50	13.50

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

WESTERN PENNA. REFINERY QUOTATIONS

600 S.R. filterable	8.00 -10.00	8.00 -10.00
650 S.R.	10.00 -11.50	10.00 -11.50
600 fl	10.50 -12.00	10.50 -12.00
630 fl	13.00 -14.00	13.00 -14.00
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	18.25 -19.00	18.25 -19.00
15 p.t.	17.25 -18.00	17.25 -18.00
25 p.t.	15.25 -16.00	15.25 -16.00

Petrolatums

WESTERN PENNA. (In bbls., carloads; in tank cars, 0.5c per lb. less. One refiner reports he equalizes freight with nearest refinery to destination)

Snow White	5.875- 6.125	5.875- 6.125
Lily White	4.875- 5.125	4.875- 5.125
Cream White	3.875- 4.125	3.875- 4.125
Light Amber	2.50	2.50
Amber	2.25	2.25
Red	(e)2.125	(e)2.125

Wax

WESTERN PENNA. REFINERY QUOTATIONS

In bbls., carloads, New York.

122-124 A.m.p., w.c. scale	(e)2.75	(e)2.75
124-126 A.m.p., w.c. scale	2.80	(h)2.80

OKLAHOMA (In bbls. or burlap bags, carloads)

124-126 A.m.p., w.c. scale	(h) 2.70 -2.75	(h) 2.70 -2.75

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.25	4.25
125-127	(i)4.35	(i)4.35
127-129	(i)4.70	(i)4.70
130-132	(i)5.00	(i)5.00
132-134	(i)5.25	(i)5.25
135-137	(i)6.00	(i)6.00

(a) Prices FOB Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations: Group 3 prices quoted on northern shipments. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) No price reported. (g) To resellers holding licenses. (h) Two refiners quoting. (i) Same prices quoted in bags or slabs loose. (j) For shipment to Ark. points only. (k) Two suppliers quoting. (l) Quotations. (m) Sales.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for March 29, 1939, and April 12, 1939, or write to NPN. These prices in effect April 17, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso Extra Gasoline (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	6.9	8.7	4	7
*Newark, N. J.	6.9	8.7	4	7
Annapolis, Md.	7.85	9.35	5	8
Baltimore, Md.	7.25	8.75	5	8
Cumberland, Md.	8.65	11.15	5	10
Washington, D. C.	7.5	9	3	9.5
Danville, Va.	8.45	10.95	6	12.9
Norfolk, Va.	7.25	9.75	6	11.5
Petersburg, Va.	7.55	10.05	6	11.7
Richmond, Va.	7.55	10.05	6	8.7
Roanoke, Va.	8.75	11.25	6	11
Charleston, W. Va.	8.05	10.55	6	12.6
Parkersburg, W. Va.	7.35	9.35	6	11.2
Wheeling, W. Va.	8.35	10.25	6	12.2
Charlotte, N. C.	8.65	11.15	7	12.1
Hickory, N. C.	9.15	11.65	7	12.5
Mt. Airy, N. C.	8.95	11.45	7	12.3
Raleigh, N. C.	8.25	10.75	7	11.6
Salisbury, N. C.	8.75	11.25	7	12.2
Charleston, S. C.	7.25	9.75	7	10.6
Columbia, S. C.	8.25	10.75	7	11.6
Spartanburg, S. C.	8.95	11.45	7	12.4

Discount to undivided dealers: thru territory, except New Jersey points, which see in "Note" below: Dealer t.w. price less 0.5c per gal.

*Effective Dec. 1, 1938, S. O. New Jersey posted a minimum retail resale price of 11.2c thru New Jersey, except Trenton area and Cumberland county.

Note: While the above posted prices continue at Atlantic City and Newark, N. J., dealers will pay a net price of 8.2c per gal. for Esolene. Dealers having pumps marked only Esso, Esolene and "Standard" White gasoline will pay 7.7c per gal. for Esolene.

Price basis to commercial consumers: Effective Aug. 10, 1938, in Virginia (except Arlington and Fairfax counties), on Essolene and Esso, accounts buying up to 100,000 gals. per year, consumer tank car price, plus 2c per gal.; accounts buying over 100,000 gals. per year, consumer t.c. plus 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals., or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(*S. O. New York Division*)

Socony Mobilgas (*Regular Grade*)

	Consumer Tank Car	"Split" Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	6.5	7.9	*5	7
Borough of Richmond (Staten Is.)	6.5	8.4	*5	7
Albany, N. Y.	6.5	8.5	5	7.25
Binghamton, N. Y.	7.5	9.5	5	8.25
Buffalo, N. Y.	7	6.8	5	7
Jamestown, N. Y.	7.25	7.9	5	7.5
Plattsburg, N. Y.	7	9.3	5	7.5
Rochester, N. Y.	7.25	7.75	5	8
Syracuse, N. Y.	7	9	5	7.5
Danbury, Conn.	7.25	9.3	4	7.75
Hartford, Conn.	6.75	8.8	4	6.50
New Haven, Conn.	6.75	8.5	4	6
Bangor, Me.	6.75	7.8	5	7.25
Portland, Me.	6.5	8.5	5	7
Boston, Mass.	6.5	8	4	6.75
Concord, N. H.	7.2	9.5	5	7.75
Lancaster, N. H.	8	10.5	5	8.75
Manchester, N. H.	7.1	9.1	5	7.5
Providence, R. I.	6.5	8.3	4	6.75
Burlington, Vt.	7	8.5	5	7.5
Rutland, Vt.	7.3	9	5	7.75

*Plus 2% city sales tax computed at time of each sale.

Discount to undivided dealers: 0.5c less than "split" dealer t.w.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia Pa.	7	8.5	5	10
Pittsburgh	8	8.5	5	10.5
Allentown	7.5	9	5	10.5
Erie	8	9	5	10
Scranton	7.5	9	5	10.5
Altoona	8	8.5	5	10.5
Harrisburg	7.5	9	5	10.5
Williamsport	7.5	9	5	10.5
Dover, Del.		9	5	10.5
Wilmington		8.5	5	9.75
Boston, Mass.		8	4	6.25
Springfield, Mass.		8.8	4	7
Worcester, Mass.		8.8	4	7
Fall River, Mass.		8.5	4	8
Hartford, Conn.		8.8	4	6.5
New Haven, Conn.		8.5	4	7
Providence, R. I.		8.3	4	7
Atlantic City, N. J.		8.2	4	7
Camden, N. J.		8.1	4	7
Trenton, N. J.		8.2	4	7
Annapolis, Md.		9.35	5	9.5
Baltimore, Md.		8.75	5	8
Hagerstown, Md.		9.85	5	10
Richmond, Va.		10.05	6	10.7
Wilmington, N. C.		9.85	7	10.8
Brunswick, Ga.		8	7	*10.5
Jacksonville, Fla.		8	8	10

*Georgia has kerosine tax of 1c per gal., not included in above price.

Discount to undivided dealers: Dealer t.w. less 0.5c per gal. except in Georgia and Florida, dealer t.w. and undivided dealer price is same.

S. O. Ohio

Sohio X-70 Gasoline
(Regular Grade)

	Consumer T.W.	†Divided Dlr.	Gasoline Taxes	Kerosine T.W.
Ohio Statewide	11	10	5	*12
Akron	10	8	5	*8.5
Cincinnati	11	9	5	*12
Cleveland	11	10	5	*12
Columbus	10	8.5	5	*12
Dayton	10	8.5	5	*12
Marietta	10	8.5	5	*12
Portsmouth	11	10	5	*12
Toledo	10	7.5	5	*12
Youngstown	10	8.5	5	*11.5

Renown Gasoline
(Third Grade)

Ohio Statewide	10.5	9.5	5	....
Akron	10	8	5	....
Cincinnati	11	9	5	....
Cleveland	10.5	9.5	5	....
Columbus	9.5	8	5	....
Dayton	10	8.5	5	....
Marietta	10	8.5	5	....
Portsmouth	10.5	9.5	5	....
Toledo	9.5	7	5	....
Youngstown	10	8.5	5	....

Note: Prices at other Ohio points may be obtained by writing NPN.

*Ohio has kerosine tax of 1c per gal., not included in above prices.

†This price also to authorized agents, exclusive of 0.5c rental.

Discount to undivided dealers: 0.5c less than divided dealer t.w.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

S. O. Kentucky

Crown Gasoline (*Regular Grade*)

	Consumer T.W.	Net Dlr.	Gasoline Taxes	Kerosine T.W
Covington, Ky.	11.5	8.5	6	9.5
Lexington, Ky.	13	10	6	10
Louisville, Ky.	11.5	8.5	6	9
Paducah, Ky.	12.5	9.5	6	9
Jackson, Miss.	10.5	7.5	7	*9
Vicksburg, Miss.	12	9	7	*8.5
Birmingham, Ala.	12	9	*8	8.5
Mobile, Ala.	12	9	*9	8.5
Montgomery, Ala.	12	10	*9	*9.5
Atlanta, Ga.	11.5	8.5	7	*7.5
Augusta, Ga.	12.5	9.5	7	*8
Macon, Ga.	11	8	7	*9
Savannah, Ga.	10.5	7.5	7	*7
Jacksonville, Fla.	11	8	8	8
Miami, Fla.	11	8	8	8
Pensacola, Fla.	11	8	*9	8
Tampa, Fla.	11	8	8	8

Kyso Gasoline (*Third Grade*)

Covington, Ky.	10	7.5	6	....
Lexington, Ky.	11.5	9	6	....
Louisville, Ky.	10	7.5	6	....
Paducah, Ky.	10.5	8	6	....
Jackson, Miss.	8.5	6	7	....
Vicksburg, Miss.	10	7.5	7	....
Birmingham, Ala.	10	7.5	*8	....
Mobile, Ala.	9.5	7	*9	....
Montgomery, Ala.	11	8.5	*9	....
Atlanta, Ga.	10	7.5	7	....
Augusta, Ga.	11	8.5	7	....
Macon, Ga.	9.5	7	7	....
Savannah, Ga.	8.5	6	7	....
Jacksonville, Fla.	9.5	7	8	....
Miami, Fla.	9.5	7	8	....
Pensacola, Fla.	9.5	7	*9	....
Tampa, Fla.	9.5	7	8	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month

**Taxes*: In the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have kerosine taxes of 1c per gal., and Mississippi 0.5c, not included in above prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.1	8.1	6.4	4	10
Decatur, Ill.	11.1	8.6	6.7	4	10
Joliet, Ill.	11.1	8.6	8.4	4	10
Peoria, Ill.	11.1	9.1	8.5	4	10
Quincy, Ill.	10.9	8.9	5.8	4	8.7
Indianapolis, Ind.	11.8	10.3	8.9	5	*10
Evansville, Ind.	11.6	10.1	7	5	*10.5
South Bend, Ind.	12.1	10.6	9.2	5	*9
Detroit, Mich.	9.1	7.6	7.1	4	7.1
Grand Rapids, Mich.	10	8.5	8	4	9.7
Saginaw, Mich.	11.8	9.1	8.1	4	9.3
Green Bay, Wis.	11.9	10	7.8	5	10.3
Milwaukee, Wis.	9.9	8.4	7.3	5	10.2
La Crosse, Wis.	11.5	10	9.5	5	10.4
Minneapolis-St. Paul	11.5	10	9	5	10.4
Duluth, Minn.	11.9	10.4	9.4	5	10.8
Mankato, Minn.	11.5	10	9.5	5	9.4
Des Moines, Ia.	10.9	9.4	8	4	*9.8
Davenport, Ia.	11.1	9.6	9.1	4	*10
Mason City, Ia.	11.3	9.8	9.1	4	*10.2
St. Louis, Mo.	10.2	8.7	7.5	*4	8
Kansas City, Mo.	10.4	8.4	6.9	*4	8
St. Joseph, Mo.	10.4	8	6.9	*4	8.4
Fargo, N. D.	12.7	11.2	10.7	4	11.6
Huron, S. D.	12	10.5	10	5	10.9
Wichita, Kans.	9.9	7.1	6.5	4	7.4

**Taxes*: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax. Kerosine taxes: Indiana has 4c, Iowa 3c per gal. state tax, not included in above prices.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha, Neb.	11.5	9	6	10.3
McCook	11.5	9.5	6	10
Norfolk	11.9	8.9	6	10.7
North Platte	12.3	9.9	6	11.1
Scottabluff	11	8.9	6	11

S. O. Louisiana

Esso Extra Gasoline (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark.	7.25	9.75	7.5	10
Alexandria, La.	6.75	9.25	8	*11.5
Baton Rouge, La.	6.75	9.25	8	*9.5
New Orleans, La.	6.75	9.25	*10	*9
Lake Charles, La.	6.75	9.25	8	*11.5
Shreveport, La.	5.5	8	8	*10
Lafayette, La.	7	9.5	8	*11.5
Bristol, Tenn.	10.25	11.25	8	13
Chattanooga, Tenn.	9.5	11	8	14
Knoxville, Tenn.	10	12.5	8	14.5
Memphis, Tenn.	8	10.5	8	12.5
Nashville, Tenn.	9	9.5	8	12

**Taxes*: New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana has kerosine tax of 1c per gal.; in addition New Orleans has 1c parish tax, none of which are included in above prices.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon, figured on basis of 50 gallons per barrel:
Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida 1/8c; Illinois, 3/100c; Indiana, 1/5c per gal. in lots up to 25 bbls.; 2/25c per gal. in lots of 25 bbls. or more; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. lots of more than 50 in bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 3/100c.
Kerosine inspection fee only: Iowa, 3/50c; Michigan, 1/5c per gal.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied, are indicated in footnotes. Dealer discounts are shown in footnotes: for commercial consumer discounts, see NPN for March 29, 1939, and April 12, 1939, or write to NPN. These prices in effect April 17, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction*

Humble Oil & Refining Co.

Humble Motor Fuel
(*Regular Grade*)

	*T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
Dallas, Tex	8	12	5	8
Ft. Worth, Tex	8	12	5	7
Houston, Tex	8	12	5	8
San Antonio, Tex	9	13	5	8

U. S. Motor Gasoline
(*Third Grade*)

Dallas, Tex	6.5	9	5
Ft. Worth, Texas	6.5	9	5
Houston, Tex	6.5	..	5
San Antonio, Tex	6.5	..	5

Thriftane
(Leaded, 67 Octane, Purple Gasoline)

Houston	7	10	5
San Antonio	8	11	5

*These tank wagon prices apply to all classes of dealers and consumers.

Continental Oil

Conoco Bronze (*Regular Grade*)
Demand (*Third Grade*)

	—Dealer Prices— Conoco Bronz-z-z	De-mand	Gasoline Taxes	Kerosine ‡T.W.
Denver, Colo	10.5	9.5	5	11.5
Grand Junc., Colo	13	12	5	15
Pueblo, Colo	9	8	5	10.5
Casper, Wyo	12	11	5	11.5
Cheyenne, Wyo	10	9	5	13
Billings, Mont	12	10	6	13
Butte, Mont	13.5	10.5	6	15.5
Great Falls, Mont	12	10	6	15.5
Helena, Mont	13	11	6	15.5
Salt Lake City, Utah	12	11	5	16
Boise, Ida	**14.1	**11.6	6	18
Twin Falls, Ida	**14.6	**13.6	6	18
Albuquerque, N. M	10	8	†6.5	10
Roswell, N. M	8.5	7.5	†6.5	8
Santa Fe, N. M	10	9	*7	10.5
Muskogee, Okla	7.5	6	5	7
Oklahoma City, Okla	6	5	5	6.5
Tulsa, Okla	6	5	5	6.5
Ft. Smith, Ark	8.25	5.75	5	7.5
Little Rock, Ark	9.25	8	7.5	8
Texarkana, Ark	8	6.5	5	8

†Includes city tax of 0.5c.
*Includes 1c city tax.
‡Prices are in t.w. deliveries to consumers and dealers.
**Prices include 0.1c to cover 1-mill tax for toll bridges.

S. O. California

Standard Gasoline
(*Regular Grade*)

	T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
San Francisco, Cal	13.5	14.5	4	11.5
Los Angeles, Cal	13	14	4	10
Fresno, Cal	14.5	15.5	4	12.5
Phoenix, Ariz	15.5	16.5	6	*12.5
Reno, Nev	15.5	16.5	5	13.5
Portland, Ore	14	15	6	13.5
Seattle, Wash	14	15	6	13.5
Spokane, Wash	17	18	6	16.5
Tacoma, Wash	14	15	6	13.5

Flight Gasoline
(*Third Grade*)

San Francisco, Cal	12	13	4	....
Los Angeles, Cal	11.5	12.5	4	....
Fresno, Cal	13	14	4	....
Reno, Nev	14	15	5	....
Phoenix, Ariz	12	13	6	....
Portland, Ore	12.5	13.5	6	....
Seattle, Wash	12.5	13.5	6	....
Spokane, Wash	15.5	16.5	6	....
Tacoma, Wash	12.5	13.5	6	....

*Arizona has kerosine tax of 5c per gal., not included in above prices.

Discount to 100% dealers, thru territory, off posted t.w. prices, on gasolines: on Standard Ethyl, Standard Gasoline and Stanavo Aviation, 3c per gal.; on Flight gasoline, 2c.

Canada

PRICES OF IMPERIAL OIL LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline
(*Regular Grade*)

	T.W.	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont	15	8	15.5
Toronto, Ont	15	8	15.5
Brandon, Man	21	7	22
Winnipeg, Man	19.5	7	20.5
Regina, Sask	19	7	21
Saskatoon, Sask	21.3	7	23.3
Edmonton, Alta	19.5	7	21.5
Calgary, Alta	16.5	7	18.5
Vancouver, B. C	16	7	23
Montreal, Que	14	6	14.5
St. John, N. B	13.5	10	17.5
Halifax, N. S	13.5	10	17.5

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car, tank wagon or dealer prices, as indicated, of aviation gasoline in several marketing territories.

S. O. OHIO
Thru Ohio
Esso Aviation

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

Discounts: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.

S. O. INDIANA
Stanavo Ethyl Aviation Gasoline
73 Octane Number

Chicago, Ill	14.9	
Detroit, Mich	16.5	4
Milwaukee, Wis	15.1	5
Minneapolis, Minn	15.3	5
St. Louis, Mo	14.5	3
Kansas City, Mo	14.2	*4
Fargo, N. D	16.5	4
Huron, S. D	15.8	5

*Includes 1c city tax.

HUMBLE OIL & REFINING CO.
Aviation Gasoline

	Tank Car
Baytown, Tex	8.5

CONTINENTAL OIL CO.
Conoco Special Gasoline

	Dealer Price	Gasoline Taxes
Denver, Colo	14.5	5
Cheyenne, Wyo	15	5
Helena, Mont	22	6
Salt Lake City, Utah	17.5	5
Albuquerque, N. M	14	*6.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA
Stanavo Aviation Gasoline

	T.W.	
Phoenix, Ariz	17.5	6
Los Angeles, Cal	15	4
San Francisco, Cal	15.5	4
Reno, Nev	17.5	5
Portland, Ore	16	6
Seattle, Wash	16	6
Spokane, Wash	19	6

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha (In Tank Wagon)

S. O. NEW JERSEY
Posted Tank Wagon Prices

	Mineral Spirits	V.M.&P.
Newark, N. J	11.5	15.5
Baltimore, Md	15.5	....
Washington, D. C	15	....

Discounts: Buyers taking following quantities at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y	10.5	12
*New York City	9.5	10.5
Rochester, N. Y	12	12
Syracuse, N. Y	12	14.5
Boston, Mass	11	11
Bridgeport, Conn	11	11.5
Hartford, Conn	10.5	11
Providence, R. I	11	12

*Prices apply to consumers only in quantities over 1,000 gals. annually. For quantities under 1,000 gals. annually, add 0.5c per gal.

ATLANTIC REFINING CO.

Philadelphia, Pa	11.5	12.5
Lancaster, Pa	13	14
Pittsburgh, Pa	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	12.5	13.5

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers off t.w. price; 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA
(*Prices include state and federal taxes*)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill	16.2	16.5	15.9
Detroit, Mich	19.2	18.2	19.7
Kansas City, Mo	13.9	14.9	14.4
St. Louis, Mo	14.2	15.2	12.9
Milwaukee, Wis	18.8	19.8	19.3
Minneapolis, Minn	19	20	17.7

Note: All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.5	9.5
New York Harbor	10	9
Philadelphia district	10.5	9
Boston	10.5	9.5
Providence	10.5	9.5
†Ohio points, delivered	8.5	*8

*This is on rubber solvent
†In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.125c less than on V.M.&P.

Price Changes

Dates and amounts of changes. See table for full current prices.

Socony-Vacuum Oil—Socony Mobilgas:
Boston and Providence consumer t.c. up 0.25c, April 10.

Atlantic Refining—Atlantic White Flash:
Altoona dealer t.w. cut 1c, April 8.

Kerosine:
Hartford t.w. cut 0.5c, April 6.

S. O. Ohio—X-70 and Renown:
Franklin county, including Columbus, dealer prices cut 0.5c, April 14.
Marietta dealer prices up 1c, April 13.

S. O. Kentucky—Crown Gasoline:
Macon cut 1c, March 30; cut 1c, April 7.

Kyso Gasoline:
Macon cut 0.5c, March 30; cut 1c, April 7.

Kerosine:
Augusta t. w. cut 1c, April 1.

S. O. Louisiana—Kerosine:
Bristol t.w. cut 1.5c, April 6.

Humble Oil & Refining—Humble Motor Fuel:
Dallas and Ft. Worth t.w. and s.s. up 1c, April 14.

U. S. Motor Gasoline:
T.w. up 0.5c, thru Texas, April 14.

Continental Oil—Conoco Bronz-z-z and Demand:
Texarkana dealer prices, Bronz-z-z up 1c, Demand 0.5c, April 13. Muskogee dealer prices cut 0.5c, April 10.

Aviation Gasoline

S. O. California—Stanavo:
Thru typographical error, t.w. price at Spokane has been published at 10c in several past issues. Correct price is 19c, ex tax, since April 29, 1938.

Fuel Oil

S. O. New Jersey—Nos. 1, 2 and 4:
Baltimore t.w. No. 1 and 2, cut 0.25c, and No. 4 up 0.25c, April 6.
Washington t.w. cut 0.25c, April 6.

Socony-Vacuum Oil—No. 4:
Albany t.w. cut 0.5c, April 7.

Nos. 2, 3 and 4:
Rochester, Bangor, Burlington and Providence cut 0.25c, April 7.

Atlantic Refining—No. 1:
Hartford t.w. cut 0.5c, April 6.

'Gas' Prices in 50 Cities

Following data on retail gasoline prices in 50 U. S. cities, as of April 1, 1939, was obtained from sources deemed reliable, but N. P. N. assumes no responsibility for their accuracy:

	Net Dealer Price	Indicated Dlr. Margin	Total "Gas" Tax*	Apparent Prevlg. Posted Retail Price, Incl. Tax
	(Figures in cents per gallon)			
Portland, Me.	8.0	3.7	5.0	16.7
Manchester	8.6	3.4	5.0	17.0
Burlington, Vt.	8.0	3.0	5.0	16.0
Boston	7.5	2.0	4.0	13.5
Providence	7.8	3.2	4.0	15.0
Hartford	8.3	3.2	4.0	15.5
Buffalo	6.3	2.0	5.0	13.3
New York	7.4	3.1	5.0	15.5
Newark	7.7	3.5	4.0	15.2
Philadelphia	8.0	3.0	5.0	16.0
Dover, Del.	8.0	2.0	5.0	15.0
Baltimore	8.25	4.05	5.0	17.3
Washington	8.5	4.0	3.0	15.5
Chastn., W. Va.	10.05	4.05	6.0	20.1
Norfolk, Va.	9.25	4.55	6.0	19.8
Charlotte, N. C.	10.65	4.05	7.0	21.7
Chastn., S. C.	8.75	3.75	7.0	19.5
Atlanta	8.5	4.0	7.0	19.5
Jacksonville	8.0	3.0	8.0	19.0
Birmingham	9.0	4.0	8.0	21.0
Vicksburg	9.0	5.0	7.0	21.0
Memphis	10.0	4.80	8.0	22.8
Lexington, Ky.	10.0	3.50	6.0	19.5
Youngstown, O.	8.0	3.0	5.0	16.0
South Bend	10.6	4.40	5.0	20.0
Chicago	8.1	1.96	4.0	14.06
Detroit	7.6	2.66	4.0	14.26
Milwaukee	8.4	3.30	5.0	16.7
St. Paul-Minneapolis	10.0	4.0	5.0	19.0
Fargo, N. D.	11.2	3.50	4.0	18.7
Huron, S. D.	10.5	4.0	5.0	19.5
Omaha	9.0	3.0	6.0	18.0
Des Moines	9.4	4.0	4.0	17.4
St. Louis	8.7	3.50	4.0	16.2
Wichita	7.1	2.65	4.0	13.75
Tulsa	6.0	4.0	5.0	15.0
Little Rock	9.25	4.25	7.5	21.0
New Orleans	8.75	4.05	10.0	22.8
Houston	8.0	4.50	5.0	17.5
Albuquerque	10.0	4.50	6.5	21.0
Denver	10.5	4.50	5.0	20.0
Casper, Wyo.	12.0	5.0	5.0	22.0
Butte, Mont.	13.5	4.50	6.0	24.0
Boise, Ida.	14.0	4.0	6.1	24.1
Salt Lake City	12.0	4.50	5.0	21.5
Reno, Nev.	12.5	4.0	5.0	21.5
Phoenix, Ariz.	12.5	4.0	6.0	22.5
San Francisco	10.5	4.0	4.0	18.5
Portland, Oreg.	11.0	4.0	6.0	21.0
Spokane, Wash.	14.0	4.0	6.0	24.0
Avg. 50 Cities	9.37	3.70	5.44	18.51

Stage 6-Weeks Meetings With Company Jobbers

TULSA, April 18. — A number of Mid-Continent Petroleum Corp.'s marketing department executives have just completed a six-weeks trip through the company's marketing territory, to acquaint its jobbers with the company's new motor oil.

Twenty-five meetings were held, total attendance being estimated at 9000 to 10,000 persons, in Arkansas, Oklahoma, Kansas, Missouri, Illinois, Kentucky, Indiana, Michigan, Iowa, Nebraska, Wisconsin and Minnesota.

Heading the Mid-Continent's executives was R. W. McDowell, vice president in charge of marketing. Others in the group were M. C. Shipley, advertising manager; A. P. McGrath, sales promotion manager; D. C. Wixon, retail sales manager; S. B. Caldwell, L. V. Surtees. P. I. Adcock and H. L. Wurster, of the division offices; C. L. Dorris, manager of subsidiary marketing. James Pitcher had charge of the entertainment features of the meetings.

Family Car's Mileage Varies In Ratio with Income

N. P. N. News Bureau

WASHINGTON—Bureau of Home Economics, Agriculture Department, has just finished a study of buying trends which shows, among other things, that motoring mileage is calculable in direct ratio to cash-in-pocket.

The study was conducted on the West Coast, and shows that, of 948 farm families, those with incomes between $250 and $500 annually drove their car an average of 2287 miles, whereas those who had incomes between $4000 and $5000, drove an average of 9042 miles, almost four times as far.

Of 1500 small-city families in the same region, those whose incomes were between $500 and $750 drove their cars an average of 2346 miles, whereas families with $5000 or above incomes averaged 7459 miles.

The figures above, along with others, will be published in a large-scale consumer purchases study made by the Home Economics Bureau.

Highway transportation in Nebraska pays $3,401,917 more in local taxes than the railroads, according to the Nebraska Petroleum Industries Committee.

It is estimated that approximately one million automobile radio sets were sold during 1938.

Motor vacation travel in 1938, estimated to have involved expenditures of $4,500,000,000, was ten per cent heavier than in 1937.

ALMA, Mich.—The recent merger between McClanahan Refg. Co., St. Louis, Mich., and Leonard Refineries here was completed with the transferring of the former company's offices to Alma.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect April 17, 1939

Following are posted tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 4
S. O. NEW JERSEY			
Atlantic City, N. J.	7.0	5.75	5.75
Newark	7.0	5.75	5.75
Annapolis, Md	....	6.5	....
Baltimore	6.75	6.25	6.25
Washington, D. C.	7.00	6.50	6.50
Norfolk, Va.	7.0	6.0	6.0
Petersburg	7.25	6.25	....
Richmond	7.25	6.25	6.25
Charlotte, N. C.	8.75	7.75	....
Hickory	....	8.25	....
Raleigh	8.75	7.25	....
Charleston, S. C.	8.5	7.0	....
Columbia	9.5	8.0	....
Spartanburg	10.2	8.7	....

SOCONY-VACUUM OIL CO. INC.
(S. O. New York Division)

	No. 2	No. 3	No. 4
New York City	5.75	5.75	5.75
Albany, N. Y.	5.75	5.75	5.25
Rochester, N. Y.	6.75	6.75	6.75
Boston, Mass	5.50	5.50	5.50
Bangor, Me	6.00	6.00	6.00
Manchester, N. H.	6.00	6.00	6.00
Burlington, Vt	6.50	6.50	6.50
Hartford, Conn	6.00	6.00	6.00
New Haven, Conn	5.50	5.50	5.50
Providence, R. I	5.50	5.50	5.50

Note: Prices for No. 1 fuel in Socony-Vacuum territory same as for kerosine which see in tank wagon table for various cities; prices change with kerosine.

ATLANTIC REFINING

	Numbers 1	2	3	4	5	6
Phila., Pa.	7.75	6.0	6.0	6.0	3.25	2.50
Allntn., Pa.	8.5	6.5	6.5	6.5	....	....
Wlmgtn., Del.	7.75	5.5	5.5	5.5	....	....
Sprngfld., Ms.	7.0	6.0	....	....	....	....
Wrestr., Ms.	7.0	5.50	....	5.50	....	....
Hrtfd., Conn.	6.5	6.0	....	6.0	....	....

S. O. OHIO

	No. 1	No. 2	No. 3
Columbus Division and Cleveland	7.50	7.50	7.00
City of Lima	8.00	8.00	7.00
Rest of Ohio	8.00	8.00	7.50

Note: S. O. Ohio prices are for full compartment hose dumps, bucket dumps are 0.5c per gallon higher.

S. O. INDIANA
Stanolex Fuel and Furnace Oils

	No. Fuel	Stanolex Furnace
Chicago	(a)6.75	6.75
Indianapolis	....	(b)7.8
Detroit	....	7.1
Milwaukee	8.4	7.7
Minneapolis	7.8	7.8
St. Louis	7.7	(c)6.7
Kansas City	6.8	6.8

(a) For 400 gals. and over; 150 to 399 gals., 7.25c; 1 to 149 gals., 8.25c.
(b) Excluding 4c state tax.
(c) For 400 gals. & over; 100 to 399 gals., 7c; 1 to 99 gals. 8c.
Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine Cents per Cwt.	Gasoline-Kerosine Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Distillate-Gas Oil-Fuel Oil Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	53	3.498	42	3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich	62	4.092	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'lis-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
From Ponca City	13	*0.858	13	†0.858
Wichita				
From Tulsa	21	*1.386	21	†1.386
From Cushing	19	*1.254	19	†1.254

*This rate also includes distillate rate at 6.6 lbs. per gal.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	April 17	
District:	60-64 Oct.	65 Oct. & Above
N. Y. harbor	6.00 – 6.25	6.00 – 6.25
(a) N. Y. harbor	5.75 – 6.00	5.75 – 6.00
Philadelphia	5.75 – 6.25	5.75 – 6.25
Baltimore	5.75 – 6.00	5.75 – 6.00
Norfolk	6.25 – 6.50	6.25 – 6.50
Wilmington, N. C.	6.00 – 6.50	6.50
Charleston, S. C.	6.00 – 6.50	6.50
Savannah	6.00 – 6.50	6.00 – 6.50
Jacksonville	6.00 – 6.50	6.00 – 6.50
Portland	6.25 – 6.50	6.50 – 7.00
Boston	5.75 – 6.00	6.00 – 6.50
Providence	5.75 – 6.00	6.00 – 6.50

WATER WHITE KEROSINE

District:			
N. Y. harbor	4.25 –4.375	Charleston	5.00 –5.25
(a) N. Y. harbor	4.125–4.25	Savannah	5.00 –5.25
Philadelphia	4.75 –5.00	Jacksonville	5.00 –5.25
Baltimore	4.75 –5.00	Portland	4.375–4.50
Norfolk	5.00 –5.25	Boston	4.25 –4.50
Wilmington, N. C.	5.00 –5.25	Providence	4.25 –4.50

(b) FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	4.25 – 4.375	4.125– 4.25
Nos. 2-3	3.75 – 4.00	3.50 – 3.75
No. 4	3.625– 4.00	3.50 – 3.75
No. 5	(m)$1.15	.....
No. 6	$0.95	.....

	Phila. dist.	Balt. dist.
No. 1	4.75 – 5.00	4.75 – 5.00
Nos. 2-3	4.25	4.25
No. 4	4.00 – 4.25	4.00 – 4.25
No. 5	$1.15	$1.15
No. 6	$0.95	$0.95

	Bost. dist.	Prov. dist.
No. 1	4.25 – 4.50	4.25 – 4.50
Nos. 2-3	3.75 – 4.00	3.75 – 4.00
No. 4	3.75 – 4.00	3.75 – 4.00
No. 5	$1.25	$1.15
No. 6	$0.95	$0.95

District:	(c) Bunker C Fuel	(c) Diesel Oil
N. Y. harbor	$0.95	$1.65
Philadelphia	$0.95	$1.65
Baltimore	$0.95	$1.65
Norfolk	$0.95	$1.65
Charleston	$0.90	$1.65
Savannah	$0.90	$1.785
Jacksonville	$0.90	$1.785
Tampa	$0.85	$1.785
Portland	$1.05	$1.75
Boston	$0.95	$1.65
Providence	$0.95	$1.65

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	3.75 – 4.00	3.75 – 4.00
Philadelphia dist.	4.25	....
Baltimore dist.	4.25	....
Norfolk dist.	4.25	....
Savannah dist.	....	4.25
Jacksonville dist	....	4.25

Pacific Export

(c) (Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	April 17	April 10
U. S. Motor, under 65 oct.	4.125– 4.25	4.125– 4.25
400 e.p. blend, under 65 oct.	4.25 – 4.375	4.25 – 4.375
400 e.p. blend 65 oct. & above	4.375– 4.625	4.375– 4.625
(d) 38-40 gravity, w.w. kerosine	4.25 – 4.50	4.25 – 4.50
41-43 gravity, w.w. kerosine	4.50 – 4.75	4.50 – 4.75
44 gravity, w.w. kerosine	5.00 – 5.25	5.00 – 5.25
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$0.95 –$1.05	$0.95 –$1.05
Diesel fuel, under 24°	$0.85 –$0.90	$0.85 –$0.90
(f) 30-34 gravity, diesel (gas oil)	$1.05 –$1.20	$1.05 –$1.20
(g) Grade C fuel oil	$0.65 –$0.68	$0.65 –$0.66

Prices Effective	April 17	April 10
In Ships' Bunkers, or deep tank lots, per bbl.:		
(f) Diesel fuel oil	$1.35 –$1.45	$1.35 –$1.45
(g) Grade C fuel oil	$0.70 –$0.90	$0.70 –$0.90
Cased Goods: (Per case)		
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
400 e.p. blend, under 65 octane	$1.50 –$1.60	$1.50 –$1.60
375-400 e.p. blend, 65 oct. & above	$1.60 –$1.70	$1.60 –$1.70
(d) 40-43 gravity, w.w. kerosine	$1.30 –$1.40	$1.30 –$1.40
Kerosine, p.w.	$1.25 –$1.35	$1.25 –$1.35

New York Export

(Cents per gal. in bbls. FAS. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	22.75	22.75
Neutral oil:		
200 3 color, 25 p.t.	23.75	23.50
150 3 color, 25 p.t.	21.75	21.50
600 s.r., unfiltered	15.50	15.50
650 s.r., unfiltered	17.50	17.50
600 fl., s.r.	18.00	18.00
630 fl., s.r.	20.50	20.50

Wax, Domestic *and* Export

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3 higher than E.M.P. Export prices, FAS., carloads. Domestic prices, FOB. refineries, in bags, carloads, with 0.2c discount allowed for shipment in bulk, except where noted below. Scale solid; fully refined, slabs in bags)

Prices Effective	April 17	
	New York	
	Domestic	Export
124-6 Y.C. scale	2.75 – 2.85	2.75 – 2.85
122-4 W.C. scale	2.75 – 2.85	2.75 – 2.85
124-6 W.C. scale	2.75 – 2.85	2.75 – 2.85
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65
135-7 Fully rfd.	(h) 5.15	5.00
	New Orleans	
	Domestic	Export
124-6 Y.C. scale	2.75 – 2.85	2.75 – 2.85
122-4 W.C. scale	2.75 – 2.85	2.75 – 2.85
124-6 W.C. scale	2.75 – 2.85	2.75 – 2.85
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65

Gulf Coast

(FOB. ship at Gulf; minimum 20,000 bbls.; representing traders' opinions)

Prices Effective	April 17	April 10
For Domestic shipment:		
MOTOR GASOLINE		
59 oct. & below	4.375– 4.50	4.375– 4.50
60-64 oct.	4.375– 4.625	4.375– 4.625
65-67 octane	4.75 – 4.875	(n) 4.75 –4.875
68-70 octane	5.00 – 5.25	5.00 – 5.25
FUEL OILS		
No. 1	3.50 – 3.75	3.625– 4.00
No. 2	3.00 – 3.375	3.00 – 3.25
KEROSINE		
41-43 gravity, w.w.	3.50 – 3.75	3.625– 3.875
For Export Shipment:		
GASOLINE		

	April 17		
Gasoline:	60-62 Gravity, 400 e.p.	61-63 Gravity, 390 e.p.	64-66 Gravity, 375 e.p.
60 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
61 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
62 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
63 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
64 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
65 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
66 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
67 octane	4.875– 5.125	4.875– 5.125	4.875– 5.125
68 octane	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
70 octane	5.125– 5.50	5.125– 5.50	5.125– 5.50

Prices Effective	April 17	April 10
For Export Shipment:		
KEROSINE		
44 gravity, w.w.	3.75 – 4.00	4.125– 4.25
41-43 gravity, w.w.	3.50 – 3.75	3.625– 3.875
41-43 gravity, p.w.	3.50 – 3.75	3.625– 3.875
GAS AND BUNKER OILS		
For Export Shipment:		
Gas Oil (i):		
Below 43 diesel index	3.00 – 3.375	3.00 – 3.25
43-47 diesel index	3.25 – 3.50	3.25 – 3.50
48-52 diesel index	3.375– 3.625	3.375– 3.625
53-57 diesel index	3.50 – 3.75	3.50 – 3.75
58 & above	3.625– 3.875	3.625– 3.875
For Domestic or Export Shipment:		
(c) Diesel Oil	$1.45	$1.45
(c) Grade C bunker oil	$0.75	$0.75
Grade C bunker oil, in cargoes	$0.73 –$0.75	$0.73 –$0.75

MID-CONTINENT LUBRICATING OILS

(Cents per gal. at Gulf; in bbls., FAS.; in bulk, FOB. terminals)

	April 17	
	(j) Barrels	Bulk
190-200 vis. D. 210 brt. stock	21.50	17.80
150-160 vis. D 210 brt. stock:		
0-10 p.p.	18.00 –18.625	13.625–14.30
10-25 p.p.	17.50 –18.125	13.125–13.80
150-160 vis. E. 210 brt. stock	17.50	13.80
120 vis. D 210 brt. stock	17.25 –17.50	13.00 –14.50

	April 17 Bulk	April 10 Bulk
180 vis. No. 3 color neutral:		
0-10 p.p.	10.05 –11.625	10.05 –11.625
15-30 p.p.	9.55 –11.125	9.55 –11.125
200 vis. No. 3 color neutral:		
0-10 p.p.	10.80 –11.50	10.80 –11.50
15-30 p.p.	10.30 –10.625	10.30 –10.625
600 s.r. olive green	9.00 –11.25	9.00 –11.25
600 s.r. dark green	7.00 – 9.25	7.00 – 9.25

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° cold test 0, bulk export shipment, FOB terminals.)

Unfiltered Pale Oils:			
Vis.	Color		
100	No. 3	4.50 – 4.75	4.50 – 4.75
200	No. 3	6.00 – 6.25	6.00 – 6.25
300	No. 3	6.50 – 6.75	6.50 – 6.75
500	No. 3½	7.50	7.50
750	No. 4	8.00 – 8.25	8.00 – 8.25
1200	No. 4	8.375– 8.75	8.375– 8.75
2000	No. 4	8.50 – 9.00	8.50 – 9.00
Red Oils:			
Vis.	Color		
100	No. 5-6	4.50 – 4.75	4.50 – 4.75
200	No. 5-6	6.00 – 6.25	6.00 – 6.25
300	No. 5-6	6.50 – 6.75	6.50 – 6.75
500	No. 5-6	7.50	7.50
750	No. 5-6	8.00 – 8.25	8.00 – 8.25
1200	No. 5-6	8.375– 8.75	8.375– 8.75
2000	No. 5-6	8.50 – 9.00	8.50 – 9.00

Note: Red oil prices cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate freight rates to Continental ports shillings per ton of 2240 lbs., British sterling: U. S. ports cents per bbl.)

Rates Effective April 17

	Crude & /or Fuel		Refined Oil & /or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont. (k)	12/6	10/6-11/6	11/9	11/-12/
Aruba-U.K./Cont. (k)	9/4½	9/-10	9/9	9/6-10/6
Gulf-N. Atlantic (l) (not E. of N.Y.): Hvy. Crude & fuel, (10 to 19.9 gravity)	19c	19-20c	....	....
Light Crude, (30 Grav. or Lighter)	17.5c	18-19c	....	....
Gasoline	....	....	16c	20c
Kerosine	....	....	17c	21c
Light Fuel	....	....	18c	22c

(a) In barge lots. (b) Fuel oils meet specifications of U. S. Commercial standards CS12-35. (c) Ships' bunkers. Lighterage, additional at some points, not included. (d) 150 fire point. (e) For San Francisco cargo prices, add 5c per bbl. to cargo prices shown above. (f) Pacific Specification 200. (g) Pacific Specification 400. (h) Shipment in bags or in bulk. (i) Less than ½ of 1% sulfur. (j) Second-hand barrels. (k) Continental ports in range between Bordeaux and Hamburg, both inclusive. (l) Venezuela loading, same rate; Tampico, 2c to 3c per bbl. additional. (m) Low pour test, low viscosity, No. 5 generally quoted at $1.25. (n) Thru clerical error, price for April 10, in April 12 issue was shown at 4.375–4.875c; correct price April 10 was 4.75–4.875c.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency
(Effective March 6, 1939, except Corning Jan. 24, 1939)

Penna. Grade Oil in Southwest Penna. Pipe Lines $1.65
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) $1.59
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) $1.55
Corning Oil in Buckeye Pipe Lines (Ohio) .. $1.02

Posted by Other Companies

Tide Water Associated Oil Co.
Bradford-Allegany district (Penna. and N. Y.) (Effective March 6, 1939) $2.00
*The Pennzoil Co.: (Effective March 6, 1939)
Penna. Grade Oil in National Transit Lines *1.93
*The Pennzoil Co. posts $1.93 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields, prices in other lower districts range down to $1.88 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.
Midland, Midland County (Oct. 14, 1938) $0.925

Posted by Simrall Corp.
(Effective Jan. 6, 1939)
Crystal, Greendale, Porter and equal grades .. $0.925
Beaverton, Buckeye, Bentley, Edenville $0.90
Freeman $0.82
(Effective April 18, 1939)
West Branch, Arenac, and equal grades $0.74

Posted by Bay Pipe Line Corp.
(Effective Jan. 1, 1939)
Bentley and Buckeye $0.90
Saginaw and Wise $0.925

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.
(Effective Oct. 13, 1938)
Illinois and Princeton $1.05
Illinois Basin $1.15
Owensboro, (Western Ky.) $1.10
Lima, O. $0.90

Posted by Sohio Corp.
Illinois Basin:
Beecher City (Effective Oct. 13, 1938) $1.15
Centralia Field:
Congested District (Effective Oct. 1, 1938) . $1.15
Area Outside Congested District (Effective Oct. 13, 1938) $1.15

Posted by Carter Oil Co.
(Effective Oct. 14, 1938)
Louden, Fayette County, Ill. $1.15

Posted by Ashland Oil & Transportation Co.
(Effective Oct. 14, 1938)
Somerset Oil in Ashland Lines, Kentucky:
Big Sandy River $1.12
Kentucky River $1.20

Posted by Stoll Oil Refining Co.
(Effective Nov. 10, 1938)
Stoll Pipe Line Oil (Ky.) $1.00

Posted by Fordsville Gathering Line, Inc.
(Effective Dec. 24, 1938)
Birk City Field, Ky. $1.05
(Effective Oct. 13, 1938)
Owensboro District, Ky. $1.10

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario
(Effective Oct. 25, 1938)
Petrolia $1.90
Oil Springs $1.97

Alberta—Turner Valley
(Prices f.o.b. field tankage)
(Effective Jan. 5, 1938)

Crude Oil			
40-40.9°	$1.14	53-53.9	$1.40
41-41.9	1.16	54-54.9	1.42
42-42.9	1.18	55-55.9	1.44
43-43.9	1.20	56-56.9	1.46
44-44.9	1.22	57-57.9	1.48
45-45.9	1.24	58-58.9	1.50
46-46.9	1.26	59-59.9	1.52
47-47.9	1.28	60-60.9	1.54
48-48.9	1.30	61-61.9	1.56
49-49.9	1.32	62-62.9	1.58
50-50.9	1.34	63-63.9	1.60
51-51.9	1.36	64-64.9	1.62
52-52.9	1.38		

Crude Naphtha, 65 grav. & above $2.14

Absorption Gasoline
90% Rec., 20 lb. Reid v.p. $1.94
90% Rec., 17 lb. Reid v.p. $2.08

MID-CONTINENT

Oklahoma-Kansas

*(Effective Oct. 11 to 22, 1938; and Feb. 16, 1939)

	S. O. Indiana	Carter Mag-nolia Shell	Conti-nental Texas Co.	Sin-clair-Prairie
Below 21°	$0.70	$0.60	....	....
21-21.9	.72	.63	....	....
22-22.9	.74	.66	....	....
23-23.9	.76	.69	....	....
24-24.9	.78	.72	....	....
25-25.9	.80	.75	....	$0.58
26-26.9	.82	.78	....	.63
27-27.9	.84	.81	....	.68
28-28.9	.86	.84	$0.86	.73
29-29.9	.88	.87	.88	.78
30-30.9	.90	.90	.90	.82
31-31.9	.92	.92	.92	.86
32-32.9	.94	.94	.94	.90
33-33.9	.96	.96	.96	.96
34-34.9	.98	.98	.98	.98
35-35.9	1.00	1.00	1.00	1.00
36-36.9	1.02	1.02	1.02	1.02
37-37.9	1.04	1.04	1.04	1.04
38-38.9	1.06	1.06	1.06	1.06
39-39.9	1.08	1.08	1.08	1.08
40 & above	1.10	1.10	1.10	1.10

*Effective by Carter Oil, Oct. 13, posting in Okla. only; Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; Sinclair-Prairie, Feb. 16, 1939; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12.

North-North Central and Central Texas

	Stano-lind	†Sinclair-Prairie	*Texas Co. *Conti-nental *Magnolia
Effective 1938:	*Oct. 17*	*Oct. 11*	
Below 21°..	$0.60	....	....
21-21.9	.62	....	....
22-22.9	.64	....	....
23-23.9	.66	....	....
24-24.9	.68	$0.76	$0.79
25-25.9	.70	for	for
26-26.9	.72	oil	oil
27-27.9	.74	below	below
28-28.9	.76	29°	29°
29-29.9	.78	.78	.81
30-30.9	.80	.80	.83
31-31.9	.82	.82	.85
32-32.9	.84	.84	.87
33-33.9	.86	.86	.89
34-34.9	.88	.88	.91
35-35.9	.90	.90	.93
36-36.9	.92	.92	.95
37-37.9	.94	.94	.97
38-38.9	.96	.96	.99
39-39.9	.98	.98	1.01
40 & above.	1.00	1.00	1.03

*Effective Oct. 11, by Continental, in North Tex.; Oct. 12, by Texas Co. in North & North Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79; by Magnolia, Dec. 3, in N. and N. Central Texas.
†Sinclair-Prairie prices are in N. Cent. Texas and Mexia.

Jefferson County, Texas

Posted by Magnolia Petroleum Co.

Beaumont

(Effective Oct. 12, 1938)

Below 20°	$0.79	30-30.9	$1.08
20-20.9	.82	31-31.9	1.10
21-21.9	.85	32-32.9	1.12
22-22.9	.88	33-33.9	1.14
23-23.9	.91	34-34.9	1.16
24-24.9	.94	35-35.9	1.18
25-25.9	.97	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

*For below 21°.
Oct. 11, '38, Stanolind Oil & Gas Co. posted same gravity and price schedule in West Beaumont field as Magnolia.

TEXAS FIELDS

Posted by Humble Oil & Refining Co.
West Central Texas
(Effective Dec. 3, 1938)

24-24.9	$0.71	33-33.9	$0.89
25-25.9	.73	34-34.9	.91
26-26.9	.75	35-35.9	.93
27-27.9	.77	36-36.9	.95
28-28.9	.79	37-37.9	.97
29-29.9	.81	38-38.9	.99
30-30.9	.83	39-39.9	1.01
31-31.9	.85	40 & above	1.03
32-32.9	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.
Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

East Central Texas
(Effective Oct. 11, 1938)

23-23.9	$0.78	32-32.9	$0.96
24-24.9	.80	33-33.9	.98
25-25.9	.82	34-34.9	1.00
26-26.9	.84	35-35.9	1.02
27-27.9	.86	36-36.9	1.04
28-28.9	.88	37-37.9	1.06
29-29.9	.90	38-38.9	1.08
30-30.9	.92	39-39.9	1.10
31-31.9	.94	40 and above	1.12

Posted by Pan American Pipe Line Co.
(Effective Feb. 15, 1939)
Cayuga, Anderson county $0.68
*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.
(Effective Dec. 3, 1938)

	Gray County	Carson-Hutchinson
28-28.9	$0.72	$0.67
29-29.9	.74	.69
30-30.9	.76	.71
31-31.9	.78	.73
32-32.9	.80	.75
33-33.9	.82	.77
34-34.9	.84	.79
35-35.9	.86	.81
36-36.9	.88	.83
37-37.9	.90	.85
38-38.9	.92	.87
39-39.9	.94	.89
40 & above	.96	.91

Effective Oct. 11, 1938, Sinclair Prairie posted same prices in Panhandle Texas as Humble posted Dec. 3. Dec. 3, Magnolia met Humble.

EAST TEXAS

Gulf, Humble, Magnolia, Sinclair Prairie, Stanolind, Texas Co., Tide-Water Associated $1.10
*Effective Oct. 11 by Humble, Sinclair Prairie, and Stanolind; Oct. 12 Magnolia, Texas, Tide Water; Oct. 13 by Gulf.

NORTHEAST TEXAS

(Posted by Humble, Oct. 11, 1938)
Talco $0.55

(Posted by Magnolia, Oct. 12, 1938)
Cass County and Panola County, Tex.:
Same gravity and price schedule as S. O. Louisiana posts for N. La.-Ark. Crude, which see under that company.

(Posted by The Texas Co., Oct. 12, 1938)
Cass County $1.05

WEST TEXAS and NEW MEXICO

(a) (Effective Oct. 11, 1938 to March 24, 1939)

	Humble	Magnolia Stano-lind	Shell	Texas Co. Sinclair
Below 20°	$0.53	(b)	$0.53	(c)
20-20.9	.55	....	.55	....
21-21.9	.57	....	.57	....
22-22.9	.59	....	.59	....
23-23.9	.61	....	.61	....
24-24.9	.63	....	.63	....
25-25.9	.65	....	.65	.65
26-26.9	.67	.67	.67	.67
27-27.9	.69	.69	.69	.69
28-28.9	.71	.71	.71	.71
29-29.9	.73	.73	.73	.73
30-30.9	.75	.75	.75	.75
31-31.9	.77	.77	.77	.77
32-32.9	.79	.79	.79	.79
33-33.9	.81	.81	.81	.81
34-34.9	.83	.83	.83	.83
35-35.9	.85	.85	.85	.85
36-36.9	.87	.87	.87	.87
37-37.9	.89	.89	for	for
38-38.9	.91	.91	oil	oil
39-39.9	.93	.93	36° &	36° &
40 & above	.95	.95	above.	above.

Pecos County, West Texas
(Posted by Humble and Shell, Oct. 11, 1938)
Pecos $0.78
Yates Shallow Pool (Shell) ..... .65

(a) Effective by Humble Oil & Refg., Shell Oil, Stanolind Oil & Gas, and Sinclair Prairie, Oct. 11, 1938; by Magnolia Petroleum and The Texas Co., Oct. 12, 1938. On March 24, 1939, Sinclair Prairie revised its posting from 40 & above, to 36 & above, at $0.87.

(b) Magnolia posts $0.63 for below 25; $0.65 for 25-25.9. Stanolind posts $0.65 for below 26.

(c) Texas Co. posts $0.65 for below 26; Sinclair Prairie, $0.63 for below 25.

Note: Humble's postings are in these counties: Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler and Yoakum, West Texas; and Lea county, N. Mex.; Magnolia's are in Crane, Glasscock, Howard, Mitchell, Upton and Winkler; Shell, in Crane, Ector, Glasscock, Howard, Upton, Winkler, Lea; Stanolind in Hendrick field, Winkler county; Texas Co. in Ward, Winkler and Lea; Sinclair in W. Texas and Lea.

Posted by Sinclair Prairie Oil Marketing Co.
(Effective Oct. 11, 1938)
Eddy county, N. Mex. $0.77

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)
Artesia, Jackson and Maljamar pools, New Mexico: gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)
Ft. Collins and Wellington

Below 29	$0.81	35-35.9	$0.95
29-29.9	.83	36-36.9	.97
30-30.9	.85	37-37.9	.99
31-31.9	.87	38-38.9	1.01
32-32.9	.89	39-39.9	1.03
33-33.9	.91	40 & above	1.05
34-34.9	.93		

Canon City and Florence, Col. $0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co.

(Effective Oct. 11, 1938)
Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski crudes $0.96
Van crude $0.93
Conroe $1.27
(Effective Dec. 3, 1938)
Flour Bluff $1.23

Oct. 12, '38, Magnolia met Humble in Darst Creek; posted $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.
Oct. 12, '38, The Texas Co. met Humble in Darst Creek.

Anahuac and Dickinson
(Effective Dec. 3, 1938)

Below 20°	$0.74	30-30.9	$1.03
20-20.9	.77	31-31.9	1.05
21-21.9	.80	32-32.9	1.07
22-22.9	.83	33-33.9	1.09
23-23.9	.86	34-34.9	1.11
24-24.9	.89	35-35.9	1.13
25-25.9	.92	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand).

Raccoon Bend (Deep sand crude) Tomball and Satsuma
(Effective Dec. 3, 1938)

22-22.9	$0.95	27-27.9	$1.05
23-23.9	.97	28-28.9	1.07
24-24.9	.99	29-29.9	1.09
25-25.9	1.01	30-30.9	1.11
26-26.9	1.03	31-31.9	1.13

(Continued on next page)

CRUDE OIL MARKETS *(Continued from preceding page)*

32-32.9	$1.15	37-37.9	$1.25
33-33.9	1.17	38-38.9	1.27
34-34.9	1.19	39-39.9	1.29
35-35.9	1.21	40 & above	1.31
36-36.9	1.23		

Dec. 3, Magnolia met above price and gravity schedule in Tomball.

Posted by Humble

**Mirando*

(Effective Dec. 3, 1938)

Below 20°	$0.74	30-30.9	$1.03
20-20.9	.77	31-31.9	1.05
21-21.9	.80	32-32.9	1.07
22-22.9	.83	33-33.9	1.09
23-23.9	.86	34-34.9	1.11
24-24.9	.89	35-35.9	1.13
25-25.9	.92	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Tex. and Heyser and Placedo crudes.

Oct. 12, '38, Texas Co. posted for Duval-Mirando, $0.77 for below 21, plus 3c differential to 26-26.9, $0.95; 27-27.9, $0.97; 28 & above, $0.99.

Dec. 3, Humble's Mirando schedule met by Magnolia.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Oct. 5, 1938)

	*N. La.-Ark.	†Columbia County, Ark.	‡South Louisiana
Below 21°	$0.73	$0.66	$0.74
21-21.9	for	for	.77
22-22.9	oil	oil	.80
23-23.9	Below	Below	.83
24-24.9	25°	25°	.86
25-25.9	$0.75	$0.68	.89
26-26.9	.77	.70	.92
27-27.9	.79	.72	.94
28-28.9	.81	.74	.96
29-29.9	.83	.76	.98
30-30.9	.85	.78	1.00
31-31.9	.87	.80	1.02
32-32.9	.89	.82	1.04
33-33.9	.91	.84	1.06
34-34.9	.93	.86	1.08
35-35.9	.95	.88	1.10
36-36.9	.97	.90	1.12
37-37.9	.99	.92	1.14
38-38.9	1.01	.94	1.16
39-39.9	1.03	.96	1.18
40 & above	1.05	.98	1.20

(Effective Oct. 5, 1938)

Smackover, Ark	$0.73
Urania, La. (Ark. Fuel Oil Co., Jan. 28, '37)	$1.02

*Includes Bunkie, Caddo, Carterville, DeSoto, Homer, Haynesville, Rodessa, Sabine and Sarepta, in N. La.; El Dorado and Miller County, Ark. (latter is Ark. part of Rodessa field).

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

†Includes Buckner, Magnolia, and Village pools.

‡Includes these fields: Baton Rouge, Bayou, Choctaw, Cheneyville, Darrow, Jeanerette, Lirette, N. Crowley and Roanoke.

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Tepetate and Ville Platte, La.	$1.03

(Effective Jan. 1, 1939)

Abbeville, La.

Below 36	$0.92	38-38.9	$0.98
36-36.9	.94	39-39.9	1.00
37-37.9	.96	40 & above	1.02

Oct. 12, 1938, Magnolia Petroleum and The Texas Co. posted same gravity and price schedule as S. O. La. posts in N. La.-Ark. in these fields: Magnolia, in Bull Bayou, Cotton Valley, Haynesville, Pine Island, and Rodessa, La., and Eldorado and Rainbow, Ark.; Texas Co. in N. La. Both also met S. O. La. in Smackover. Texas Co. posted $1.24 for Garden Island, La. and $1.04 for Lafitte, La.

*GULF COASTAL FIELDS

Posted by Humble Oil & Refining Co.

†(Effective Oct. 11, 1938)

Below 20	$0.79	30-30.9	$1.08
20-20.9	.82	31-31.9	1.10
21-21.9	.85	32-32.9	1.12
22-22.9	.88	33-33.9	1.14
23-23.9	.91	34-34.9	1.16
24-24.9	.94	35-35.9	1.18
25-25.9	.97	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

Polk County, Tex.

(Posted by Shell Oil Co., Inc.)

Livingston Area (Effective Oct. 11, '38)	$1.10
Schwab Area (Effective Feb. 20, '39)	1.00

†Effective Dec. 3, 1938, gravities up to 45 & above discontinued in Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

*Humble's prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mykawa, Sugarland, Thompsons, Webster and West Columbia; also Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Oct. 11, 1938, Stanolind posted in Clinton, Hastings, High Island, So. Houston, and Spindletop, same prices as Humble in Texas Gulf Coast fields, except that Stanolind's lowest grade is below 21, at $0.82.

Oct. 12, 1938, The Texas Co. posted for Texas & La. Gulf Coast crude: $0.82 for below 21 plus 3c to 26-26.9, which is $1; from there on, 2c, to 34 & above, which is $1.16. In Refugio, same as other Gulf Coast, except highest gravity is 28 & above, $1.04.

Effective Oct. 11, 1938, Sinclair Prairie met Humble's Gulf Coast price & gravity schedule.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 11, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Iles, light, Col.	0.98
Iles, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo.	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co.

(Effective Oct. 11, 1938)

Elk Basin, Wyo.	$0.90
Grass Creek, light	0.90
Rock Creek	1.00
Lance Creek	0.77
Dry Creek, Mont.	0.92

(Effective May 1, 1938)

Grass Creek, heavy	$0.50

(Effective Nov. 16, 1937)

Sunburst, Mont.	$0.90

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Cat Creek, Mont.	$1.10
Big Muddy, Wyo.	0.98
Lance Creek, Wyo.	0.77

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936; Elk Hills effective June 22, 1936; Lakeview Area, Aug. 19, 1936; El Segundo and Wilmington, Oct. 15, 1937; Greeley-Canal, July 9, 1938; Santa Maria Valley, by Union Oil, Oct. 15, 1938.

Gravity	Signal Hill (Long Beach) El Segundo †Wilmington	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills Midway-Sunset Lakeview Area	Greeley-Canal (Kern County)	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria (Union Oil)
13-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.63
14-14.9	$0.80	$0.79	$0.74	$0.78	$0.79	$0.80	$0.76	....	....	$0.80	$0.76	$0.76	$0.77	$0.78	....	$0.70	....	$0.70	$0.70	....	$0.70	$0.70	....	.65
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.68
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	....
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	.70	.74	.74	....	.74	.71	.70	....
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....	....	.70	.78	.78	....	.78	.72	.70	....
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.82	.82	....	.82	.74	.70	....
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.87	.87	....	.86	.78	.72	....
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.92	.92	....	.90	.82	.76	....
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.97	.97	....	.94	.86	.79	....
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	1.01	1.01	....	.98	.90	.83	....
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	1.06	1.06	....	1.02	....	....	....
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	1.10	1.10	$0.91	1.06	....	....	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	1.15	1.15	.94	1.10	....	....	....
29-29.9	1.17	1.15	.93	1.18	1.18	....	1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	1.20	1.20	.98	1.14	....	....	....
30-30.9	1.21	1.19	.95	1.22	1.21	....	1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	1.25	1.25	1.02	1.18	....	....	....
31-31.9					1.24	....	1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	1.29	1.29	1.06				
32-32.9	*Ellwood Terrace			....	1.27	....	1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.34	1.34	1.09	Kettleman Hills			....
33-33.9	....	1.28	....	....	....	....	....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.38	1.38	1.13	....	1.19	....	....
34-34.9	....	1.32	....	....	....	....	....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	1.17	....	1.23	....	....
35-35.9	....	1.35	....	....	....	....	....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	1.20	....	1.27	....	....
36-36.9	....	1.39	....	....	....	....	....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	1.24	....	1.31	....	....
37-37.9	....	1.43	....	....	....	....	....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	1.28	....	1.35	....	....
38-38.9	....	....	....	....	....	....	....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	1.31	....	1.39	....	....
39-39.9	....	....	....	....	....	....	....	1.61	....	....	....	....	1.40	....	....	....	....	....	....	1.35	....	1.43	....	....
40-40.9	....	....	....	....	....	....	....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	1.39	....	....	....	....
41-41.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	....
42-42.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.46	....	....	....	....
43-43.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.50	....	....	....	....
44-44.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.54	....	....	....	....
45-45.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.57	....	....	....	....
46-46.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.61	....	....	....	....
47-47.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.65	....	....	....	....
48-48.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.68	....	....	....	....

F.O.B. Standard Pipe Line

*F. o. b. ship.

‡Also McKittrick, Kern River. Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted.

†Wilmington prices differ on gravities below 18.9. Prices are: 14-16.9, $0.75; 17-17.9, $0.77; and 18-18.9, $0.79; rest of schedule same as Signal Hill.

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Oil Port in Prairie

Success of the only seaport in the world in the middle of the prairie has been due in part to the oil industry, according to a recent report of the PWA regional administration on the Brownsville, Tex., port, now two and a half years old.

The port is 17 miles inland from the Gulf of Mexico. A canal, 25 feet deep, was dug from the Gulf to Brownsville, and a turning basin was excavated right out on the prairie. The canal now is being deepened to 29 feet. By the time the port was completed several oil companies had built tank farms and bulk terminals and oil and petroleum products have been one of the major items passing through the port.

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Preferably one who has had experience with sales and advertising promotion in the oil industry, particularly through the middle west. He should have created sales and advertising himself and also spent time in the field contacting jobbers, major company managers and agents and dealers.

The company inserting this advertisement is not an oil company but is directly allied with the oil business and is a first class, responsible organization.

Please give information as to experience and training in order to permit intelligent preliminary consideration and thus avoid unnecessary correspondence. No personal interviews will be given.

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"STRICTLY PERSONAL"

H. E. Bangert, formerly sales manager for Roosevelt Oil Co., Mt. Pleasant, Mich., has been appointed vice-president of Midwest Refineries at Alma, Mich.

* * *

Several changes have been made in marketing personnel of Barnsdall Refining Co. following enlargement of its territory to include Colorado, Nebraska, Iowa and a portion of Wyoming. **J. F. Krebs,** formerly a salesman at Wichita, Kan. has been made special representative. **B. B. Cook,** formerly special representative now is assistant manager with headquarters in Kansas City. **C. E. Hicks** has been moved up from district salesman at Springfield, Mo. to position of special representative with headquarters at Kansas City.

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A group of Magnolia Petroleum Co.'s representatives held a meeting in Tulsa last week for that company's dealers in eastern Oklahoma. **J. L. Green,** sales manager for Oklahoma, was in charge of the meeting. He was assisted by **F. S. Dunnaway,** advertising and sales promotion manager, **R. L. Anderson,** manager of the jobbing department, **Charles Arnold,** agent at Oklahoma City, and **P. E. Armstrong,** Tulsa agent.

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R. E. King, general manager of the Diamond Oil Co., Racine and Milwaukee, Wis., is now on an extended trip through the Orient.

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William J. Oliphant, sales representative for Patent Chemicals, Inc., Jersey City, N. J., has returned to his headquarters after several weeks in the Mid-Continent checking on the demand for the new green-colored, leaded third grade motor fuel.

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Bradley Murray has been transferred from the Tulsa office of Danciger Oil & Refineries, Inc. to Milwaukee where he will be sales representative for the company in Wisconsin. He succeeds **Joe Bussard,** who has been made northern division manager.

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Henry L. Prestholdt, president of the Old Colony Gas & Oil Co. of Minneapolis, and his daughter, Pollyanna, spent the Easter vacation motoring in the south. Among southern and southwestern cities visited were Hot Springs, Ark., Tulsa, Fort Worth, Dallas, San Antonio, Tex., and New Orleans.

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F. E. Hobgood has been named general manager of Consumers Co-operatives Associated, Amarillo, Tex., replacing **O. C. Burgess,** resigned. Hobgood formerly was manager of the Consumers Fuel Assn., Dalhart, Tex. **Merle A. Young** has been named successor to Hobgood at Dalhart.

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J. J. Theisen, president of Teisen-Clemens Co., jobbers at St. Joseph, Mich. returned recently from a tour of Europe and northern Africa.

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Glen Ames, division manager for Phillips Petroleum Co., Tulsa, was chairman of the committee in charge of plans for the 25th anniversary banquet of the Tulsa Y.M.C.A., held the night of April 17.

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New officers elected to the API Pacific Coast District division of production include, **H. C. Pyle,** Union Oil Co., chairman; **R. N. McMasters,** Chanslor-Canfield Midway Oil Co., **H. C. Stone,** The Texas Co., and **M. W. Morris,** Standard Oil Co. of California, vice-chairmen of the Los Angeles Basin, Coastal and San Joaquin Valley districts, respectively. **W. G. Corey,** Pacific Gear & Tool Works, was made treasurer and **D. S. Kilgour,** California Oil and Gas Ass'n., secretary. The election of officers and advisory committee was by membership of the API group in Spring Meeting at Los Angeles April 11.

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Arrived April 7 — **Richard Drew Lewis,** new grandson (the first) of **Wayne Goble,** editor of "Dealer News," weekly publication of the Retail Petroleum Dealers Ass'n. of California.

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W. B. McCluer was elected to the board of directors of Kendall Refining Co. at a recent meeting. McCluer left the staff of Pennsylvania State College's petroleum refining laboratory four years ago to join Kendall.

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A. J. Fiore, Jr., Madison, Wis., the Fiore Coal & Oil Co., and his daughter Frances are taking a late winter vacation visiting Hollywood and Los Angeles. They left Madison April 5 driving to the West Coast, and expect to return in the near future. This is the first vacation Fiore has taken since he entered the oil marketing business in 1923.

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Captain A. A. Nichoson, personnel manager of The Texas Co., was scheduled to address employes of the Central States Pipeline Company at Salem, Ill., April 18, on the topic "Has Industry Reached the End of the Road?"

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A testimonial dinner honoring **Paul T. Cherington,** believed to be the first to give a course on marketing (at Harvard's Graduate School of Business Administration in 1909), will be given on the 30th anniversary of such a course, April 25, at Hotel Ambassador here. The dinner is sponsored by the American Marketing Assn., New York chapter, and the Market Research Council.

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Dr. Frank H. Surface, director of research, Standard Oil Co. of New York, is included among many industrial leaders comprising the committee on arrangements.

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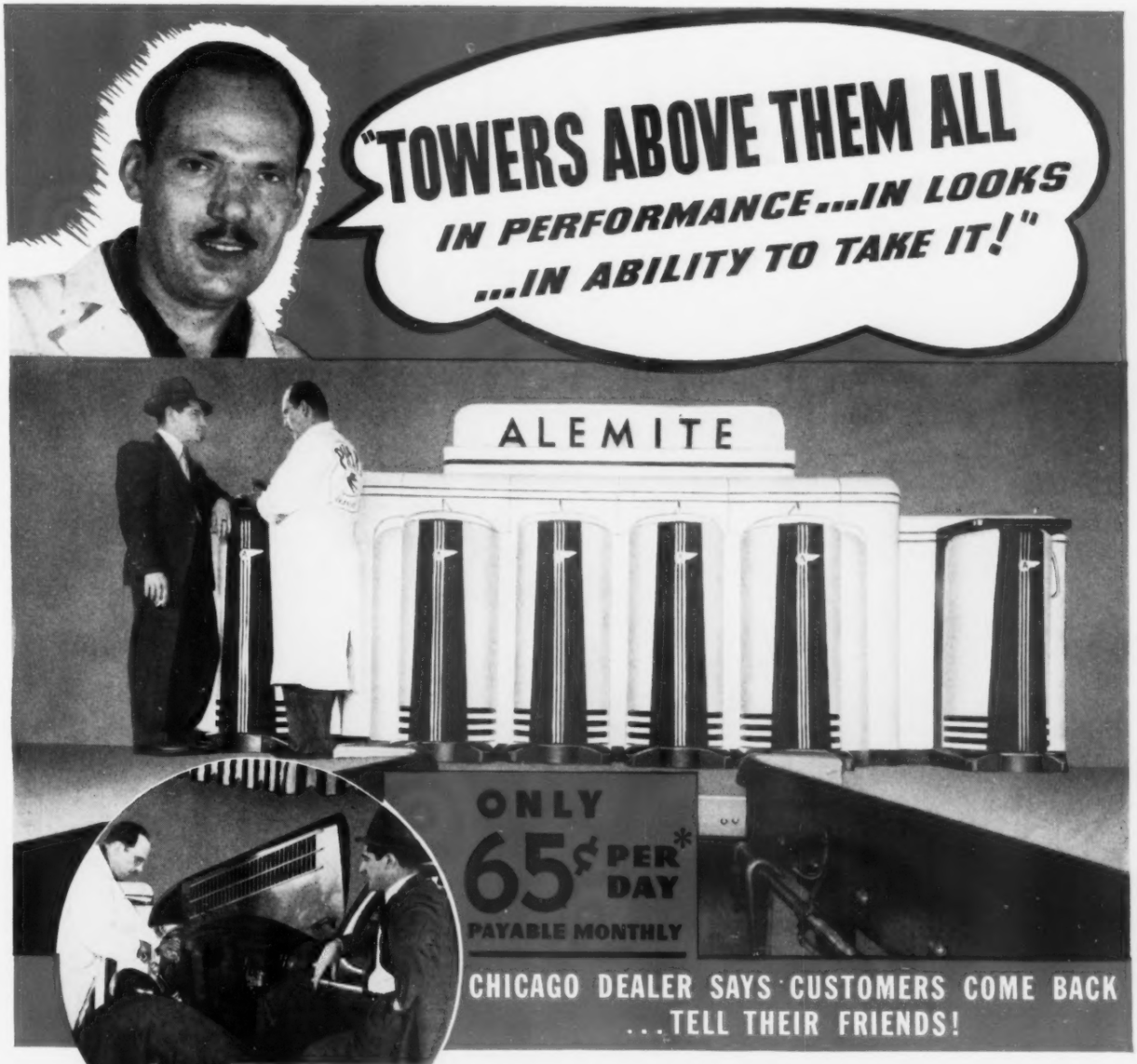
Leading southwestern oil men and bankers from the north and east will gather in Dallas April 20 for a three-day golden anniversary celebration for **Nathan Adams,** president of the First National Bank in Dallas, who completes 50 years of continuous service with the bank.

American Petroleum Institute's committee on public relations met at French Lick, Indiana, on April 15. Reading from left to right in this picture are: J. W. S. Bessonette, The Pure Oil Co., Chicago, Ill.; N. B. Curtice, The Pure Oil Co., Minneapolis, Minn.; G. E. Everett, American Petroleum Institute, New York; Eben Griffiths, Socony-Vacuum Oil Co., Inc., New York; Ralph Champlin, Ethyl Gasoline Corp., New York; Ray E. Miller, Hanlon-Buchanan, Inc., Tulsa, Okla.; K. E. Cook, Standard Oil Co. of New Jersey, New York; Wilmer Schuh, Natl. Assn. of Petroleum Retailers, Milwaukee, Wis.; W. S. S. Rodgers, The Texas Company, New York; Victor H. Scales, American Petroleum Institute, New York; J. A. McNally, American Petroleum Institute, New York; J. C. Welliver, Sun Oil Company, Philadelphia, Pa.; W. A. O'Day, The American Oil Co., Baltimore, Md.; H. H. Anderson, Shell Oil Co., Inc., St. Louis, Mo.; Carl Barker, Shell Oil Co., Inc., St. Louis, Mo.; D. T. Pierce, Consolidated Oil Corp., New York; James Tanham, The Texas Company, New York; R. L. Heaton, Standard Oil Co. (Kentucky), Louisville, Ky.



CHICAGO DEALER SAYS CUSTOMERS COME BACK ...TELL THEIR FRIENDS!

Customers are impressed with the efficient performance and snappy appearance of modern Alemite Equipment. "They come back for more—tell their friends."

Clean—fast—accurate—the 1939 Alemiters do a better job with lower air consumption, build business for all departments.

ED Taffink, service attendant at Piper's Super Service Station, 7130 North Western Avenue, Chicago, is mighty proud of the new Alemiter 194 shown in these photographs. He says, *"As far as I'm concerned, Alemite Equipment towers above them all in ability to take it—in performance—in looks.*

"When a customer likes the looks of your equipment and is satisfied with the way it operates, you can figure he'll come back for more—and what's more, he'll send his friends in. We're in business for the long pull, so that's why we took on Alemite Equipment."

Morey Fligelman, service manager of Piper's, is only one of thousands who realize that modern Alemite Lubrication Equipment helps build business for every department. *The complete new Alemite line includes a set-up for every size of business.* Its efficient performance permits a better lubrication job with lower air consumption. Phone, wire, or write for details!

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WORLD'S LARGEST MANUFACTURER OF LUBRICATION PRODUCTS

W. G. Franke

W. G. Franke, sales manager of the American Mexican Petroleum Corp., is president this year of the Chicago Oil Men's Club. One of the oldest and largest organizations of its kind, the club is noted for its hospitality and social functions at its well-equipped quarters in the Petroleum Building on Chicago's famous Michigan Avenue.

Franke has spent his entire business life in the oil industry. Graduating from Chicago's Senn High School in 1920, he went to work with James B. Berry Sons Co., and then to the Berry Asphalt Co. where he was secretary in 1934 and 1935. He joined the American Mexican Petroleum Corp. in 1935.

His hobbies are golf and his two daughters, three and six years old.